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F-35A Operational Basing Environmental Impact Statement Vol II Appendices A-E

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14. ABSTRACT

Development and fielding of the F-35A represents one of the priority defense programs for the U.S. The F-35 program was initiated in the early 1990s to provide the premier strike fighter aircraft to the Air Force, Marine Corps, and Navy, as well as international partners for the next several decades. Currently, the Air Force is scheduled to acquire and field over 1,700 F-35As over the next several decades; this basing action is only a part of the Air Force's program to assure availability of combat-ready pilots and maintenance personnel in the most advanced fighter aircraft in the world. This Environmental Impact Statement focuses on the analysis of alternative locations for and the Records of Decision for the Air Force's initial operational wing locations.

15. SUBJECT TERMS

F-35A, Environmental Impact Statement, Environmental Analysis, Record of Decision, Operational Location, US Air Force

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
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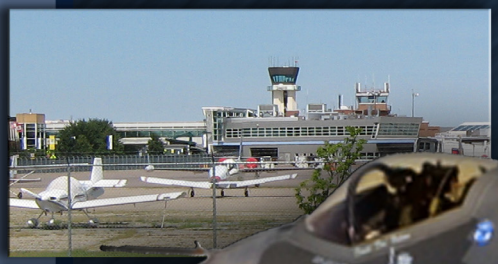
F-35A Operational Basing
Environmental Impact Statement



Volume II
Appendices

September 2013

How to Use This Document

Our goal is to give you a reader-friendly document that provides an in-depth, accurate analysis of the proposed action, the alternative basing locations, the no-action alternative, and the potential environmental consequences for each base. The organization of this Environmental Impact Statement, or EIS, is shown below.

EXECUTIVE SUMMARY

Synopsis of Purpose and Need and Proposed Action and Alternatives
Comparison of Impacts

OVERALL PROPOSAL VOLUME I

PREFACE
Detailed Guide for Reading the Final EIS

CHAPTER 1
Purpose and Need for the Air Force F-35A Operational Beddown

CHAPTER 2
- Overview of the Proposed Action and Alternatives
- Alternative Identification Process
- Summary Comparison of the Proposed Action and Alternatives

CHAPTER 3
Resource Definition and Methodology

INFORMATION SPECIFIC TO EACH BASE VOLUME I

CHAPTER 4
Six Base-Specific Sections

Burlington AGS	Hill AFB	Jacksonville AGS	McEntire JNGB	Mountain Home AFB	Shaw AFB
Section BR1.0 Proposed Action Overview	**Section HL1.0** Proposed Action Overview	**Section JX1.0** Proposed Action Overview	**Section Mc1.0** Proposed Action Overview	**Section MH1.0** Proposed Action Overview	**Section SH1.0** Proposed Action Overview
Section BR2.0 Base-Specific Project Details	**Section HL2.0** Base-Specific Project Details	**Section JX2.0** Base-Specific Project Details	**Section Mc2.0** Base-Specific Project Details	**Section MH2.0** Base-Specific Project Details	**Section SH2.0** Base-Specific Project Details
Section BR3.0 Affected Environment and Environmental Consequences	**Section HL3.0** Affected Environment and Environmental Consequences	**Section JX3.0** Affected Environment and Environmental Consequences	**Section Mc3.0** Affected Environment and Environmental Consequences	**Section MH3.0** Affected Environment and Environmental Consequences	**Section SH3.0** Affected Environment and Environmental Consequences
Section BR4.0 Cumulative Effects, Irreversible and Irretrievable Commitment of Resources	**Section HL4.0** Cumulative Effects, Irreversible and Irretrievable Commitment of Resources	**Section JX4.0** Cumulative Effects, Irreversible and Irretrievable Commitment of Resources	**Section Mc4.0** Cumulative Effects, Irreversible and Irretrievable Commitment of Resources	**Section MH4.0** Cumulative Effects, Irreversible and Irretrievable Commitment of Resources	**Section SH4.0** Cumulative Effects, Irreversible and Irretrievable Commitment of Resources

OVERALL PROPOSAL VOLUMES I & II

CHAPTER 5
References

CHAPTER 6
List of Preparers and Contributors

CHAPTER 7
Index

CHAPTER 8
Glossary, Acronyms, and Abbreviations

CHAPTER 9
Mailing Lists

Appendices: Volume II

Appendix A – Public Involvement
Appendix B – Consultation
Appendix C – Noise Modeling and Airspace Operations
Appendix D – Air Quality
Appendix E – Revised Draft EIS Public Comments and Responses

Final

United States Air Force
F-35A Operational Basing
Environmental Impact Statement (EIS)

Volume II
Appendices

September 2013

VOLUME II
TABLE OF CONTENTS

Appendix **Page**

Appendix B Tables

Appendix C Tables

Appendix C Figures

Appendix E Tables

Appendix E Comments and Responses

Public Involvement

Appendix A

NOTICE OF INTENT

FOR FURTHER INFORMATION PLEASE CONTACT: Mike Spaits, Eglin AFB Public Affairs Office, 101 West D Avenue, Suite 110, Eglin Air Force Base, FL 32542–5499, phone (850) 882–2836, e-mail: *mike.spaits@eglin.af.mil* or check the Web site, *http://www.eglin.af.mil/housing_privatization/index.asp.*

Bao-Anh Trinh,

YA–3, DAF, Air Force Federal Register Liaison Officer.

[FR Doc. E9–30980 Filed 12–29–09; 8:45 am]

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DEPARTMENT OF DEFENSE

Department of the Air Force

Notice of Intent to Prepare an Environmental Impact Statement for Basing F–35A Operational Aircraft

AGENCY: United States Air Force, Air Combat Command and Air National Guard.

ACTION: Notice of Intent.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321, *et seq.*), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500–1508), and Air Force policy and procedures (32 CFR Part 989), the Air Force is issuing this notice to advise the public of its intent to prepare an Environmental Impact Statement (EIS) to assess the potential environmental impacts of establishing operational F–35 Joint Strike Fighter (JSF) aircraft at one or more existing Air Force installations within the continental United States.

The proposed basing alternatives include: Mt. Home AFB, Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina (SC); and Jacksonville AGS, Florida.

Each candidate base is an alternative. For Mt. Home AFB, Hill AFB, and Shaw AFB/McEntire JNGB, the potential environmental impacts will be analyzed for no action and in increments of 24 primary assigned aircraft (PAA). For Burlington AGS and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and in increments of 18 and 24 primary assigned aircraft.

The Air Force version of the F–35 JSF, designated F–35A, is a conventional take-off, multiple-role fighter with an emphasis on air-to-ground missions. The aircraft was designed to supplement and eventually replace legacy aircraft as well as complement the air-to-air mission of the F–22A Raptor. At any of the alternative locations, the beddown action would involve personnel changes, facility construction and modifications, and aircraft operations.

Scoping: In order to effectively define the full range of issues to be evaluated in the EIS, the Air Force will determine the scope of the EIS (i.e., what will be covered and in what detail) by soliciting scoping comments from interested state and federal agencies and interested members of the public through the **Federal Register** and various media in the local areas of concern. Scoping comments should be submitted to the address below by the date indicated. The Air Force will also hold a series of scoping meetings to further solicit input regarding the scope of the proposed action and alternatives.

DATES: The Air Force intends to hold scoping meetings in the following communities: January 11–14, 2010 Grand View, Twin Falls, Boise, and Mt. Home Idaho; January 19–22, 2010 Ogden, Layton, Callao Utah; Wendover Nevada; January 25–28, 2010 Winooski, Vermont; Littleton, New Hampshire; Watertown, New York; February 1–4, 2010 Sumter, Eastover, and Kingstree, South Carolina; Augusta and Brunswick Georgia; February 8–12 2010 Jacksonville, Avon Park, Lake Wales and Palatka Florida. The scheduled dates, times, locations and addresses for the meetings will be published in local media a minimum of 15 days prior to the scoping meetings. All meetings will be held from 6 p.m. to 8 p.m.

Comments will be accepted at any time during the environmental impact analysis process. However, to ensure the Air Force has sufficient time to consider public input in the preparation of the Draft EIS, comments should be submitted to the address below by March 1, 2010.

FOR FURTHER INFORMATION CONTACT: Ms. Sheryl Parker, HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB, VA 23665–2769, telephone 757/764–9334.

Bao-Anh Trinh, YA–3, DAF,

Air Force Federal Register Liaison Officer.

[FR Doc. E9–30671 Filed 12–29–09; 8:45 am]

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DEPARTMENT OF DEFENSE

Department of the Air Force

U.S. Air Force Scientific Advisory Board Notice of Meeting

AGENCY: U.S. Air Force Scientific Advisory Board, Department of the Air Force, Defense.

ACTION: Meeting Notice.

SUMMARY: Under the provisions of the Federal Advisory Committee Act of 1972 (5 U.S.C., Appendix, as amended), the Government in the Sunshine Act of 1976 (5 U.S.C. 552b, as amended), and 41 CFR 102–3.150, the Department of Defense announces that the United States Air Force Scientific Advisory Board meeting will take place on Tuesday, January 12th, 2010, at the SAF/AQ Conference and Innovation Center, 1550 Crystal Dr., Arlington, VA, 22202. The meeting will be from 8 a.m.—5 p.m. The purpose of the meeting is to hold the United States Air Force Scientific Advisory Board quarterly meeting to discuss the FY10 Scientific Advisory Board study topics tasked by the Secretary of the Air Force and the results of the Air Force Research Laboratory Assessment.

Pursuant to 5 U.S.C. 552b, as amended, and 41 CFR 102–3.155, the Administrative Assistant of the Air Force, in consultation with the Office of the Air Force General Counsel, has determined in writing that the United States Air Force Scientific Advisory Board meeting will be closed to the public because they will be concerned with classified information and matters covered by sections 5 U.S.C. 552b(c) (1) and (4).

Any member of the public wishing to provide input to the United States Air Force Scientific Advisory Board should submit a written statement in accordance with 41 CFR 102–3.140(c) and section 10(a)(3) of the Federal Advisory Committee Act and the procedures described in this paragraph. Written statements can be submitted to the Designated Federal Officer at the address detailed below at any time. Statements being submitted in response to the agenda mentioned in this notice must be received by the Designated Federal Officer at the address listed below at least five calendar days prior to the meeting which is the subject of this notice. Written statements received after this date may not be provided to or considered by the United States Air Force Scientific Advisory Board until its next meeting. The Designated Federal Officer will review all timely submissions with the United States Air

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING LETTERS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

HQ ACC/A7
129 Andrews Street, Suite 100
Langley AFB VA 23665-2769

JAN 19 2010

The Honorable Patrick Leahy
433 Russell Senate Office Building
Washington, DC 20510

Dear U.S. Senator Leahy

The United States Air Force (Air Force) is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of basing operational F-35 aircraft at one or more Air Force installations within the continental United States. The F-35 is the next generation strike aircraft designed for the Air Force, Navy, Marines and our international allies. The Air Force variant of the F-35, designated F-35A, will supplement and replace legacy aircraft. Basing alternatives being considered include: Mountain Home Air Force Base (AFB), Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina; and Jacksonville AGS, Florida. For Mountain Home AFB, Hill AFB, and Shaw AFB, the potential environmental impacts will be analyzed for no action and for basing scenarios of 24 primary assigned aircraft (PAA), 48 PAA, and 72 PAA. For Burlington AGS, McEntire JNGB, and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and basing scenarios of 18 and 24 PAA. At any of the alternative basing locations, the proposed action would involve personnel changes, facility construction, demolition, and/or modifications, and aircraft training operations.

The Air Force recognizes open communication of issues is a critical element of the EIS process, and will host scoping meetings in communities near the proposed beddown locations. Scoping meeting dates and locations are attached. Meetings with public, agency, and American Indian stakeholders during this scoping process will help identify the full range of reasonable alternatives, potential impacts, and key issues to be considered in the environmental impact analysis process. During the scoping meetings, which will be held from 6 to 8 p.m. in an open-house format, Air Force representatives will describe the proposed action and alternatives, explain the National Environmental Policy Act (NEPA), outline opportunities for public involvement, and answer questions about the proposal. Interested parties or citizens are welcome to join the meeting at any time since information will be provided throughout the duration of the open house. The Air Force will publish notices of EIS preparation and upcoming public scoping meetings in local newspapers.

Public and agency comments received during the meetings, as well as written comments received by the Air Force during the scoping period and throughout the environmental process, will be considered in the preparation of the EIS. To ensure the Air Force has sufficient time to consider public input in the preparation of the Draft EIS, we are requesting that comments be submitted by March 1, 2010 to HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB VA 23665-2769, ATTN: Ms. Sheryl Parker, F-35A Ops EIS Project Manager.

If you or your staff has any specific questions or concerns about this proposal or desire additional information, we would like to hear from you. Our EIS project manager is Ms. Sheryl Parker, HQ ACC/A7PS and can be reached at the above address or at (757) 764-9334. Information is also available at www.airforcef-35opseis.com beginning January 19th 2010.

Sincerely

DAVE C. HOWE
Brigadier General, USAF
Director, Installations and Mission Support

Attachment:
Scoping Meeting Locations and Dates

Scoping Meeting Locations and Dates

Hill AFB

- Tuesday, January 19, 2010, Ogden Union Station, Wattis-Dumke Room, 2501 Wall Ave, Ogden, Utah
- Wednesday, January 20, 2010, Courtyard Marriott, Millennium A & B Rooms, 1803 Woodland Park Drive, Layton, Utah
- Thursday, January 21, 2010, Callao School, 225 Pony Express Road, Callao, Utah
- Friday, January 22, 2010, West Wendover Branch Library, 590 Camper Road, Wendover, Nevada

Burlington AGS

- Monday, January 25, 2010, O'Brien Community Center, 32 Malletts Bay Avenue, Winooski, Vermont
- Tuesday, January 26, 2010, Littleton High School (Cafeteria), 159 Oak Hill Avenue, Littleton, New Hampshire
- Thursday, January 28, 2010, Jefferson Community College, 1220 Coffeen Street, Watertown, New York

Shaw AFB/McEntire JNGB

- Monday, February 1, 2010, University of South Carolina – Sumter, Arts & Letters Building, Room 116, 200 Miller Road, Sumter, South Carolina
- Tuesday, February 2, 2010, Eastover Community Center, 624 Main Street, , Eastover, South Carolina
- Wednesday, February 3, 2010, Glen Hills High School, 2840 Glenn Hills Drive, Augusta, Georgia
- Thursday, February 4, 2010, Kingstree Senior High School, 616 Martin Luther King Jr. Avenue, Kingstree, South Carolina

Jacksonville ANG

- Monday, February 8, 2010, College of Coastal Georgia, 3700 Altama Avenue, Brunswick, Georgia ,
- Tuesday, February 9, 2010, Florida State College, 4501 Capper Road, Jacksonville, Florida
- Wednesday, February 10, 2010, South Florida Community College, 600 West College Drive, Avon Park, Florida
- Thursday, February 11, 2010, Lake Wales Public Library, 290 Cypress Gardens Lane, Lake Wales, Florida
- Friday February 12, 2010, Palatka Public Library, 601 College Road, Palatka, Florida

Mountain Home AFB

- Tuesday, February 16, 2010, Grand View Elementary, 205 1st Street, Grand View, Idaho
- Wednesday, February 17, 2010, Boise State University, Student Union Building, Barnwell Room, 1910 University Drive, Boise, Idaho
- Thursday, February 18, 2010, College of Southern Idaho Student Union Building (N. Cafeteria), 315 Falls Avenue, Twin Falls, Idaho
- Friday, February 19, 2010, Hacker Middle School, 550 East Jackson, Mountain Home, Idaho

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The Honorable Susan Collins
413 Dirksen Senate Office Bulding
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1460 Cassat Avenue, Suite B
Jacksonville, FL 32205

The Honorable Denise Grimsley
Florida House of Representatives
205 S. Commerce Avenue Suite B
Sebring, FL 33870

The Honorable John Wood
Florida House of Representatives
702 Jones Avenue
Haines City, FL 33844

The Honorable JD Alexander
Florida Senate
201 Central Ave. W. City Hall Complex
Lake Wales, FL 33859

The Honorable Mike Horner
Florida House of Representatives
323 Pleasant Street
Kissimmee, FL 34741

The Honorable Janet Adkins
Florida House of Representatives
905 South 8th Street
Fernandina Beach, FL 32034

The Honorable Baxter Troutman
Florida House of Representatives
44 4th Street SW
Winter Haven, FL 33880

The Honorable Mia Jones
Florida House of Representatives
3890 Dunn Avenue Suite 901
Jacksonville, FL 32218

The Honorable Audrey Gibson
Florida House of Representatives
101 East Union Street Suite 402
Jacksonville, FL 32202

The Honorable Jennifer Carroll
Florida House of Representatives
8970 103rd Street Suite 10
Jacksonville, FL 32210

The Honorable Roger Lane
Florida House of Representatives
P.O. Box 899D
Darien, GA 31305

The Honorable Ronald Renuart
Florida House of Representatives
50 A1A N. Suite 105
Ponte Vedra, FL 32082

The Honorable Charles McBurney
Florida House of Representatives
76 S. Laura Street Suite 200
Jacksonville, FL 32202

The Honorable Alan Grayson
455 N Garland Avenue, Ste 402
Orlando, FL 32801

The Honorable Jack Kingston
805 Gloucester Street Room 304
Brunswick, GA 31520

The Honorable Michael Weinstein
Florida House of Representatives
155 Blanding Blvd. Suite 10
Orange Park, FL 32073

The Honorable Adam Putnam
650 E. Davidson Street
Bartow, FL 33830

The Honorable Corrine Brown
101 East Union Street Suite 202
Jacksonville, FL 32202

The Honorable Ander Crenshaw
1061 Riverside Avenue, Ste 100
Jacksonville, FL 32204

The Honorable Kelly Spratt
Mayor of Darien
c/o City of Darien P.O. Box 452
Darien, GA 31305

The Honorable Thomas Rooney
335 S. East Ocean Blvd.
Stuart, FL 34994

The Honorable Jack Van Sickle
Mayor of Lake Wales
201 W. Central Avenue
Lake Wales, FL 33853

The Honorable John Peyton
Mayor of Jacksonville
117 W. Duval Street
Jacksonville, FL 32202

The Honorable Sharon Schuler
Mayor of Avon Park
110 E. Main Street
Avon Park, FL 33825

The Honorable Karl Flagg
Mayor of Palatka
1700 Oak Street
Palatka, FL 32177

The Honorable George Hensly
Mayor of Sebring
368 S Commerce Avenue
Sebring, FL 33870

The Honorable Bill Nelson
United States Senate
Washington, DC 20510

The Honorable Michael Crapo
United States Senate
251 East Front Street, Suite 205
Boise, ID 83702

The Honorable Tim Corder
Idaho Senate
357 SE Corder Dr.
Mountain Home, ID 83647

The Honorable Walt Minnick
House of Representatives
33 E. Broadway Avenue
Meridian, ID 83642

The Honorable Larry Rose
Chairperson, Elmore County Commission
P.O. Box 880
Glenns Ferry, ID 83623

The Honorable Thomas Rist
Mayor of Mountain Home
P.O. Box 10
Mountain Home, ID 83647

The Honorable Richard Willis
Idaho House of Representatives
P.O. Box 602
Glenns Ferry, ID 83623

The Honorable Stephen Hartgen
Idaho Senate
1681 W. Wildflower Ln.
Twin Falls, ID 83301

The Honorable John Milton
Chairperson, Humboldt County Commission
50 W 5th Street
Winnemucca, NV 89445

The Honorable Jim Nakano
Malheur County Commission
251 B Street, W
Vale, OR 97918

The Honorable James Risch
United States Senate
350 N. 9th St. Ste 302
Boise, ID 83702

The Honorable C.L. "Butch" Otter
Governor of Idaho
P.O. Box 83720
Boise, ID 83720

The Honorable Bert Brackett
Idaho Senator
Flat Creek Ranch
Rogerson, ID 83302

The Honorable Connie Cruser
Elmore County Commission
150 South 4th East, Suite 3
Mountain Home, ID 83647

The Honorable David Bieter
Mayor of Boise
150 North Capitol Boulevard
Boise, ID 83702

The Honorable Paul Spang
Mayor of Grand View
P.O. Box 126
GrandView, ID 83624

The Honorable Pete Nielsen
Idaho House of Representatives
4303 S.W. Easy St.
Mountain Home, ID 83647

The Honorable Demar Dahl
Chairperson, Elko County Commission
575 Idaho Street
Elko, NV 89801

The Honorable Louis Wettstein
Malheur County Commission
251 B Street, W
Vale, OR 97918

The Honorable Michael Crapo
United States Senate
239 Dirksen Senate Office Building
Washington, DC 20510

The Honorable William Ritchie
Special Assistant Military Affairs
150 South 3rd Street East
Mountain Home, ID 83647

The Honorable Mike Simpson
House of Representatives
802 West Bannock, Suite 600
Boise, ID 83702

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Elmore County Commission
150 South 4th East, Suite 3
Mountain Home, ID 83647

The Honorable Lance Clow
Mayor of Twin Falls
P.O. Box 1907
Twin Falls, ID 83303

Mountain Home City Council
160 South 3rd East
Mountain Home, ID 83647

The Honorable Jim Patrick
Idaho Senate
2231 E 3200 N
Twin Falls, ID 83301

The Honorable Mike Bell
Chairperson, Humboldt County Commission
50 W 5th Street
Winnemucca, NV 89445

The Honorable James Risch
United States Senate
Russell Senate Office Building
Washington, DC 20510

The Honorable Vivian Fleming-McGhaney
President, Sumter County Council
13 East Canal Street
Sumter, SC 29150

The Honorable Phil Leventis
South Carolina Senate
P.O. Box 1592
Sumter, SC 29151

The Honorable G. Murrell Smith
123 Conyers St.
Sumter, SC 29150

The Honorable Ricky Burrows
Mayor of Kingstree
703 Frierson Street
Kingstree, SC 29556

The Honorable Rita Culbern
Mayor of Louisville
P.O. 527
Louisville, GA 30334

The Honorable Joseph McElveen Jr.
Mayor of Sumter
20 Buford Street
Sumter, SC 29150

The Honorable John Barrow
House of Representatives
213 Cannon HOB
Washington, DC 20515

The Honorable Deke Copenhaver
Mayor of Augusta
530 Greene Street
Augusta, GA 30901

The Honorable Leroy Faber
Mayor of Eastover
P.O. Box 58
Eastover, SC 29044

The Honorable Jim DeMint
United States Senate
290 Russell Senate Office Building
Washington, DC 20510

The Honorable John Spratt
House of Representatives
1401 Longworth Building
Washington, DC 20515

The Honorable Lindsay Graham
United States Senate
290 Russell Senate Office Building
Washington, DC 20510

The Honorable Saxby Chambliss
United States Senate
416 Russell Senate Office Building
Washington, DC 20510

The Honorable James Clyburn
House of Representatives
2135 Rayburn House Office Building
Washington, DC 20510

The Honorable Sonny Perdue
Governor of Georgia
Georgia State Capitol
Atlanta, GA 30334

The Honorable Mark Sanford
Governor of South Carolina
P.O. Box 12267
Columbia, SC 29211

The Honorable Johnny Isakson
United States Senate
416 Russell Senate Office Building
Washington, DC 20510

The Honorable Lynn Westmoreland
1601-B East Highway 34
Newnan, GA 30265

The Honorable John Spratt
House of Representatives
201 East Main Street Suite305
Columbia, SC 29730

The Honorable Henry Brown
House of Representatives
5900 Core Avenue Suite 401
North Charleston, SC 29406

The Honorable Jimmy Bales
1515 Crossing Creek Road
Eastover, SC 29044

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

JAN 19 2010

MEMORANDUM FOR FAA - Eastern Region (NY)
1 Aviation Plaza
Jamaica, NY 11434

FROM: HQ ACC/A7P
129 Andrews Street
Langley AFB VA 23665-2769

SUBJECT: F-35A Operational Basing Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of basing operational F-35 aircraft at one or more Air Force installations within the continental United States. The F-35 is the next generation strike aircraft designed for the Air Force, Navy, Marines and our international allies. The Air Force variant of the F-35, designated F-35A, will supplement and replace legacy aircraft. In accordance with Executive Order, 12372, Intergovernmental Review of Federal Programs, the Air Force is requesting input from other federal, state and local agencies on the proposal.

2. The Air Force proposes to base operational F-35A aircraft at one or more installations within the continental United States. Basing alternatives being considered include: Mountain Home Air Force Base (AFB), Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina; and Jacksonville AGS, Florida. For Mountain Home AFB, Hill AFB, and Shaw AFB, the potential environmental impacts will be analyzed for no action and basing scenarios of 24 primary assigned aircraft (PAA), 48 PAA, and 72 PAA. For Burlington AGS, McEntire JNGB, and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and for basing scenarios of 18 and 24 PAA. At any of the alternative basing locations, the proposed action would involve personnel changes, facility construction, demolition, and/or modifications, and aircraft operations.

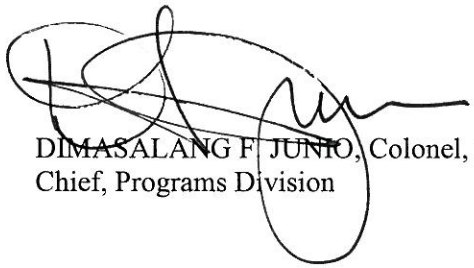
3. In support of this process we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the EIS. In addition, if your agency recently completed, is currently implementing, or is planning to undertake any new activities which you believe should be included as part of our cumulative impact analysis, we ask you to identify the activity and provide a Point of Contact.

4. The Air Force recognizes open communication of issues is a critical element of the EIS process, and will host scoping meetings in communities near the proposed beddown locations. Scoping meeting dates and locations are attached. Meetings with public, agency, and American Indian stakeholders during this scoping process will help identify the full range of reasonable alternatives, potential impacts, and key issues to be considered in the environmental impact analysis process. During the scoping meetings, which will be held from 6 to 8 p.m. in an open-house format, Air Force representatives will describe the proposed action and alternatives, explain the National Environmental Policy Act (NEPA), outline opportunities for public involvement, and answer questions about the proposal. Interested parties or citizens are welcome to join the meeting at any time since information will be provided throughout the duration of the open house. The Air Force will publish notices of EIS preparation and upcoming public scoping meetings in local newspapers.

5. Public and agency comments received during the meetings, as well as written comments received by the Air Force during the scoping period and throughout the environmental process, will be considered in the preparation of the EIS. To ensure the Air Force has sufficient time to consider public input in the preparation of the Draft EIS, we are requesting that comments be submitted by March 1, 2010 to HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB VA 23665-2769, ATTN: Ms. Sheryl Parker, F-35A Ops EIS Project Manager.

6. If you or your staff has any specific questions or concerns about this proposal or desire additional information, we would like to hear from you. Our EIS project manager is Ms. Sheryl Parker, HQ ACC/A7PS and can be reached at the above address or at (757) 764-9334. Information is also available at www.airforcef-35opseis.com beginning January 19, 2010.

Sincerely



DIMASALANG F. JUNIO, Colonel, USAF
Chief, Programs Division

Attachment
Scoping Meeting Locations and Dates

Scoping Meeting Locations and Dates

Hill AFB

- Tuesday, January 19, 2010, Ogden Union Station, Wattis-Dumke Room, 2501 Wall Ave, Ogden, Utah
- Wednesday, January 20, 2010, Courtyard Marriott, Millennium A & B Rooms, 1803 Woodland Park Drive, Layton, Utah
- Thursday, January 21, 2010, Callao School, 225 Pony Express Road, Callao, Utah
- Friday, January 22, 2010, West Wendover Branch Library, 590 Camper Road, Wendover, Nevada

Burlington AGS

- Monday, January 25, 2010, O'Brien Community Center, 32 Malletts Bay Avenue, Winooski, Vermont
- Tuesday, January 26, 2010, Littleton High School (Cafeteria), 159 Oak Hill Avenue, Littleton, New Hampshire
- Thursday, January 28, 2010, Jefferson Community College, 1220 Coffeen Street, Watertown, New York

Shaw AFB/McEntire JNGB

- Monday, February 1, 2010, University of South Carolina – Sumter, Arts & Letters Building, Room 116, 200 Miller Road, Sumter, South Carolina
- Tuesday, February 2, 2010, Eastover Community Center, 624 Main Street, , Eastover, South Carolina
- Wednesday, February 3, 2010, Glen Hills High School, 2840 Glenn Hills Drive, Augusta, Georgia
- Thursday, February 4, 2010, Kingstree Senior High School, 616 Martin Luther King Jr. Avenue, Kingstree, South Carolina

Jacksonville ANG

- Monday, February 8, 2010, College of Coastal Georgia, 3700 Altama Avenue, Brunswick, Georgia ,
- Tuesday, February 9, 2010, Florida State College, 4501 Capper Road, Jacksonville, Florida
- Wednesday, February 10, 2010, South Florida Community College, 600 West College Drive, Avon Park, Florida
- Thursday, February 11, 2010, Lake Wales Public Library, 290 Cypress Gardens Lane, Lake Wales, Florida
- Friday February 12, 2010, Palatka Public Library, 601 College Road, Palatka, Florida

Mountain Home AFB

- Tuesday, February 16, 2010, Grand View Elementary, 205 1st Street, Grand View, Idaho
- Wednesday, February 17, 2010, Boise State University, Student Union Building, Barnwell Room, 1910 University Drive, Boise, Idaho
- Thursday, February 18, 2010, College of Southern Idaho Student Union Building (N. Cafeteria), 315 Falls Avenue, Twin Falls, Idaho
- Friday, February 19, 2010, Hacker Middle School, 550 East Jackson, Mountain Home, Idaho

FAA - New England
12 New England Executive Park
Burlington, MA 01803

USEPA
290 Broadway
New York, NY 10007

State Planning Office
184 State Street, 38 State House Station
Augusta, ME 04333

New Hampshire Office of Energy and Planning
57 Regional Drive
Concord, NH 03301

USFWS
300 West Gate Center Drive
Hadley, MA 01035

Vermont Department of Environmental Conservation, Commissioner's Office
One South Building
103 South Main Street
Waterbury, VT 05620

FAA-Eastern Region (NY)
1 Aviation Plaza
Jamaica, NY 11434

Vermont Department of Health
108 Cherry Street
Burlington, VT 05402

Vermont Fish & Wildlife Department
10 South Building
103 South Main Street
Waterbury, VT 05671

Vermont Agency of Transportation
National Life Building, One National Life Drive
Montpelier, VT 05633

USEPA
1 Congress Street, Suite 1100
Boston, MA 02114

Natural Resources Conservation Service
1193 South Brownell Road, Suite 105
Williston, VT 05495

Department of City Planning's Environmental Assessment and Review Division
22 Reade Street
New York, NY 10007

Department of Housing & Comminity Affairs, Division of Historic Preservation
National Life Building, Drawer 20
Montpelier, VT 05620

Vermont Department of Environmental Conservation, Water Supply Division
Old Pantry Building
103 South Main Street
Waterbury, VT 05671

Vermont Department of Environmental Conservation, Water Quality Division
Building 10 North, 103 South Main Street
Waterbury, VT 05671

Vermont Agency of Natural Resources, Policy Research and Planning
Center Building, 103 South Main Street
Waterbury, VT 05671

Vermont Agency of Natural Resources
Center Building, 103 South Main Street
Waterbury, VT 05671

Dept. of Environmental Conservation, Vermont Agency of Natural Resources
103 South Main Sreet
Waterbury, VT 05671

U.S. Forest Service
825 Avenue E
Ely, NV 89301

U.S. Fish and Wildlife Service, Nevada Ecological Field Office
1340 Financial Blvd, Suite 234
Reno, NV 89502

Bureau of Land Management
State Office
1340 Financial Blvd
Reno, NV 89502

U.S. EPA, Region IX Office of the Regional Administrator
75 Hawthorne Street
San Francisco, CA 94105

Bureau of Reclamation
705 N. Plaza Street Room 320
Carson City, NV 89701

USDA Forest Service - Ruby Mtn./ Jarbidge Ranger Stations
P.O. Box 246
Wells, NV 89835

Bureau of Land Management - Elko
3900 E. Idaho Street
Elko, NV 89801

Nevada Division of Env Protection State of Nevada, Capitol Complex
901 South Stewart Street, Suite 4001
Carson City, NV 89701

Nevada Division of Emergency Management
2525 S Carson St
Carson City, NV 89711

Nevada Department of Wildlife
60 Youth Center Road
Elko, NV 89801

Nevada Department of Wildlife
Reno Headquarters
1100 Valley Road
Reno, NV 89512

Division of Water Planning
901 South Stewart Street, Ste 2002
Carson City, NV 89701

U.S. Forest Service - Humboldt/Toiyabe National Forest
2035 Last Chance Road
Elko, NV 89801

State of Nevada, Division of Lands
901 South Stewart Street, Suite 5003
Carson City, NV 89701

Air Force Western Regional Environmental Office
50 Fremont Street, Suite 2450
San Francisco, CA 94105

Office of Environmental Policy and Compliance U.S. Department of the Interior
Main Interior Building, MS2462, 1849 C Street, NW
Washington, DC 20240

National Trust for Historic Preservation Mountains/ Plains Regional Office
910 16th Street, Suite 1100
Denver, CO 80202

Nevada State Clearinghouse
Department of Administration
209 E Musser St., Room 200
Carson City, NV 89701

Florida State Clearing House - Florida Department of Environmental Protection
3900 Commonwealth Blvd.
Mail Station 47
Tallahassee, FL 32399

Agency for Health Care Administration
2727 Mahan Drive
Tallahassee, FL 32308

Florida Division of Historical Resources
500 South Bronough Street, Room 305
Tallashassee, FL 32399

Agency for Workforce Innovation
107 East Madison Street
MSC 110-Caldwell Bldg
Tallahassee, FL 32399

Attorney General
The Capitol PL-01
Tallahassee, FL 32399

Agency for Persons with Disabilities
4030 Esplanade Way, Ste 380
Tallahassee, FL 32399

Department of Business and Professional Regulation
1940 N Monroe Street
Tallahassee, FL 32399

Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399

Auditor General
Claude Pepper Bldg,
111 W Madison Street
Tallahassee, FL 32399

Department of Financial Services
200 East Gaines Street
Tallahassee, FL 32400

Department of Health
4052 Bald Cypress Way
Tallahassee, FL 32401

Department of Environmental Protection & Natural Resources
3900 Commonwealth Blvd M.S. 49
Tallahassee, FL 32399

Department of Management Services
4050 Esplanade Way
Tallahassee, FL 32399

Department of Military Affairs
82 Marine Street
St Augustine, FL 32084

Department of Law Enforcement
2331 Phillips Road
Tallahassee, FL 32308

Department of State
500 S Bronough Street
Tallahassee, FL 32400

Department of Transportation
605 Suwannee Street
Tallahassee, FL 32399

Department of Revenue
5050 West Tennessee Street
Tallahassee, FL 32399

Dept of Agriculture and Consumer Services
The Capitol
Tallahassee, FL 32400

Florida Legislature Division of Legislative Information Services
Claude Pepper Building,
111 West Madison Street
Tallahassee, FL 32399

Department of Veterans' Affairs
4040 Esplanade Way, Ste 152
Tallahassee, FL 32399

Public Service Commission
2540 Shumard Oak Blvd
Tallahassee, FL 32399

Florida Association of Soil & Water Conservation Districts
16806 NW 40th Place
Newberry, FL 32669

Florida Supreme Court
500 South Duval Street
Tallahassee, FL 32400

Florida Fish & Wildlife Conservation Commission
620 South Meridian St
Tallahassee, FL 32399

Environmental Protection Agency
100 Alabama Street SW
Atlanta, GA 30303

Florida Division of Forestry
3125 Conner Blvd
Tallahassee, FL 32399

USDA Forest Service
325 John Knox Road, Ste F-100
Tallahassee, FL 32303

US Fish & Wildlife Service
1875 Century Blvd
Atlanta, GA 30345

Administrative Office of the Courts
244 Washington Street, SW Ste 500
Atlanta, GA 30334

Department of Economic Development
75 Fifth Street, N.W., Suite 1200
Atlanta, GA 30308

Department of Natural Resources
2 Martin Luther King, Jr. Drive, S. E., Suite 1252
Atlanta, GA 30304

Georgia Forestry Commission
5645 Riggins Mill Road
Dry Branch, GA 31020

Georgia Soil and Water Conservation Commission
4310 Lexington Road
Athens, GA 30603

Governor's Office of Consumer Affairs
2 Martin Luther King Jr., Drive SE
Suite 356
Atlanta, GA 30334

Georgia Dept of Human Services Division of Family & Children Services
2 Peachtree Street, NW
Atlanta, GA 30303

Southern Regional Office
1720 Peachtree Road NW
Atlanta, GA 30367

Big Cypress National Preserve
33100 Tamiami Trl E
Ochopee, FL 34141

Atlanta Regional Commission
3715 Northside Parkway Northwest
Atlanta, GA 30327

Georgia Office of Homeland Security
935 East Confederate Avenue, SE
Atlanta, GA 30316

Department of Public Safety
PO Box 1456
Atlanta, GA 30371

Georgia Professional Standards Commission
2 Peachtree Street NW, Ste 6000
Atlanta, GA 30303

Georgia State Financing and Investment Commission
270 Washington Street, Ste 2140
Atlanta, GA 30334

Office of the Attorney General
40 Capital Square, SW
Atlanta, GA 30334

Public Service Commission
244 Washington Street SW
Atlanta, GA 30334

Southern Regional Extension Forestry
Forest Resources Bldg 4-402
Athens, GA 30602

USDA Natural Resources Conservation Service
2614 NW 43rd Street
Gainesville, FL 32606

Everglades National Park
PO Box 279
Homestead, FL 33030

Department of Community Health
2 Peachtree Street, NW
Atlanta, GA 30303

Georgia Department of Labor
148 Andrew Young International Blvd. NE
Atlanta, GA 30303

Department of Transportation
One Georgia Center
600 W. Peachtree NW
Atlanta, GA 30308

Georgia Regional Transportation Authority
245 Peachtree Center Avenue, Ste 800
Atlanta, GA 30303

Georgia Technology Authority
47 Trinity Avenue SW
Atlanta, GA 30334

FAA –Orlando Airports District Office
5950 Hazeltine National Dr, Ste. 400
Orlando, FL 32822

Jack Peterson
BLM State Office
1387 S. Vinnell Way
Boise, ID 83709

Ken Miller
BLM Elko District Office
3900 E. Idaho Street
Elko, NV 89801

BLM Military Liaison
5665 Morgan Mill Road
Carson City, NV 89701

Ed Monnig
Humboldt-Toiyabe National Forest
1200 Franklin Way
Sparks, NV 89431

Dave Henderson
BLM Vale District Office
100 Oregon Street
Vale, OR 97918

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BLM Winnemucca District Office
5100 East Winnemucca Blvd.
Winnemucca, NV 89445

Tom Montoya
Mountain City Ranger District
2035 Last Chance Road
Elko, NV 89801

Randall Smith
Idaho Fish and Game
P.O. Box 428
Jerome, ID 83338

Cal Groen
Idaho Fish and Game - Headquarters
600 Walnut St.
Boise, ID 83712

Nevada Department of Wildlife
Winnemucca
815 E. Fourth Street
Winnemucca, NV 89445

Reese Tietje
Nevada State Clearinghouse
209 E. Musser Street Room 200
Carson City, NV 89701

Nevada Department of Wildlife
Elko
60 Youth Center Road
Elko, NV 89801

Eric Rickerson
Oregon Department of Fish & Wildlife
3406 Cherry Avenue N.E.
Salem, OR 97303

Federal Acitivities Program Manager
Nevada Fish and Wildlife Office
1340 Finanacial Boulevard, Suite 234
Reno, NV 89502

Nevada State Clearinghouse
Department of Administration
209 E Musser St., Room 200
Carson City, NV 89701

Jeff Foss
Snake River Fish and Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, ID 83709

Gar Abbas
Ruby Mountain/Jarbidge Ranger District
140 Pacific Avenue
Wells, NV 89835

Terrie Jarell
Santa Rosa Ranger District
1200 East Winnemucca Blvd.
Winnemucca, NV 89445

Gary Miller
USFWS La Grande Field Office
3502 Hwy 30
La Grande, OR 97850

Michelle Pirzadeh
USEPA - Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Robin Thorson
USFWS - Pacific Region 1
911 NE 11th Ave
Portland, OR 97232

Ren Lohoefener
USFWS Northwest Regional Office
911 NE 11th Ave.
Portland, OR 97232

Bill Baker
BLM Jarbidge Field Office
2536 Kimberly Road
Twin Falls, ID 83301

BLM Boise District
3948 Development Way
Boise, ID 837052

Georgia State Clearinghouse
270 Washington Street, SW
8th Floor
Atlanta, GA 30334

U.S. Fish and Wildlife Service
1875 Century Blvd, Ste 400
Atlanta, GA 30345

Georgia Department of
Natural Resources
#2 Martin Luther King Drive, Floyd
Building E, Tower Suite 1452
Atlanta, GA 30334

U.S. Fish and Wildlife Service
2610 Lehostsky Hall, Box 341003
Clemson, SC 29634

U.S. Fish and Wildlife Service
105 Westpart Drive
Westpark Center, Ste D
Athens, GA 30606

U.S. Fish and Wildlife Service
176 Croghan Spur Rd., Ste 200
Charleston, SC 29407

South Carolina DNR
Rembert C. Dennis Building, 1000
Assembly Street
Columbia, SC 29201

FAA - Atlanta Airports District Office
1701 Columbia Avenue Campus
Building 2-260
College Park, GA 30337

South Carolina State Clearinghouse
Office of State Budget
1201 Main Street, Suite 950
Columbia, SC 29201

South Carolina Department of
Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

South Carolina DNR
Strom Thurmond Federal Building,
1835 Assembly Street, Room 950
Columbia, SC 29201

Environmental Division (S4)
PO Box 55001
MCAS Beaufort, SC 22904

U.S. Fish and Wildlife Service
247 S. Milledge Avenue
Athens, GA 30605

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

FEB 08 2010

MEMORANDUM FOR Judy Drabicki
Regional Director
NYSDEC Region 6
317 Washington Street
Watertown, NY 13601

FROM: HQ ACC/A7P
129 Andrews Street, Room 308
Langley AFB VA 23665-2769

SUBJECT: F-35A Operational Basing Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of basing operational F-35 aircraft at one or more Air Force installations within the continental United States. The F-35 is the next generation strike aircraft designed for the Air Force, Navy, Marines and our international allies. The Air Force variant of the F-35, designated F-35A, will supplement and replace legacy aircraft. Basing alternatives being considered include: Mountain Home Air Force Base (AFB), Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina; and Jacksonville AGS, Florida. For Mountain Home AFB, Hill AFB, and Shaw AFB, the potential environmental impacts will be analyzed for no action and for basing scenarios of 24 primary assigned aircraft (PAA), 48 PAA, and 72 PAA. For Burlington AGS, McEntire JNGB, and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and basing scenarios of 18 and 24 PAA. At any of the alternative basing locations, the proposed action would involve personnel changes, facility construction, demolition, and/or modifications, and aircraft training operations.

2. The Air Force recognizes open communication of issues is a critical element of the EIS process and therefore asks for your input in identifying any issues or concerns you may have regarding the proposal. Public and agency comments received during the scoping period and throughout the environmental process will be considered in the preparation of the EIS. To ensure the Air Force has sufficient time to consider public input in the preparation of the draft EIS, we are requesting that comments be submitted by March 1, 2010 to HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB VA 23665-2769, ATTN: Ms Sheryl Parker, F-35A Ops EIS Project Manager.

3. If you have any specific questions or concerns about this proposal or desire additional information, we would like to hear from you. Our EIS Project Manager is Ms Sheryl Parker, HQ ACC/A7PS, and can be reached at the above address or at (757) 764-9334. Information is also available at www.airforcef-35opseis.com beginning January 19, 2010.

Sincerely

DIMASALANG F. JUNIO, Colonel, USAF
Chief, Programs Division (A7P)

Paul Conner
City of South Burlington
575 Dorset Street
South Burlington, VT 05403

David E. White
Director of Planning
City of Burlington Planning and Zoning
149 Church Street
Burlington, VT 05401

Jennifer Ely
Winooski Valley Park District
Ethan Allen Homestead
Burlington, VT 05408

Heather Kendrew
Director of Maintenance, Engineering,
and Environmental Compliance
Burlington International Airport
1200 airport Drive, Box 1
South Burlington, VT 05403

Mr. Charles Hafter
City Manager
City of South Burlington
575 Dorset Street
South Burlington, VT 05403

City of Burlington City Council
149 Church Street
Burlington, VT 05401

Bill Cooper
County Club Estates
42 Country Club Drive
South Burlington, VT 05403

Robert McEwing
Burlington International Airport
1200 Airport Drive, Box 1
South Burlington, VT 05403

Greg Brown
Chittenden County Regional Planning
Commission
30 Kimball Avenue, Suite 206
South Burlington, VT 05403

Bruce Chapell
Winooski Natural Resources
Conservation District
617 Comstock Road, Suite 1
Berlin, VT 05602

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

JAN 19 2010

MEMORANDUM FOR Maine Historic Preservation Commission
55 Capital Street, Station 65
Augusta, ME 04333

FROM: HQ ACC/A7P
129 Andrews Street
Langley AFB VA 23665-2769

SUBJECT: F-35A Operational Basing Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of basing operational F-35 aircraft at one or more Air Force installations within the continental United States. The F-35 is the next generation strike aircraft designed for the Air Force, Navy, Marines and our international allies. The Air Force variant of the F-35, designated F-35A, will supplement and replace legacy aircraft. Basing alternatives being considered include: Mountain Home Air Force Base (AFB), Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina; and Jacksonville AGS, Florida. For Mountain Home AFB, Hill AFB, and Shaw AFB, the potential environmental impacts will be analyzed for no action and for basing scenarios of 24 primary assigned aircraft (PAA), 48 PAA, and 72 PAA. For Burlington AGS, McEntire JNGB, and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and basing scenarios of 18 and 24 PAA. At any of the alternative basing locations, the proposed action would involve personnel changes, facility construction, demolition, and/or modifications, and aircraft training operations.

2. The purpose of this correspondence is to initiate the Section 106 process of the National Historic Preservation Act (NHPA) of 1966 (as amended) in the potentially affected areas. We are in the early stages of gathering information concerning previous archaeological and historic studies for the areas under the affected region. We would appreciate any assistance you could provide in identifying and retrieving this important information, as well as concerns you may have about the potential effects of the proposal on significant cultural resources.

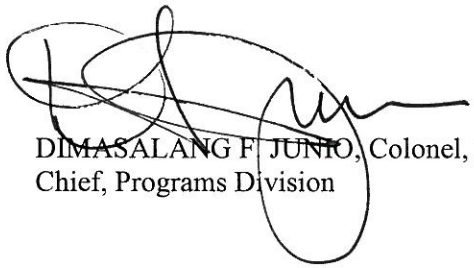
3. The Air Force will host public scoping meetings in communities near the proposed beddown locations. Scoping meeting dates and locations are attached. The Air Force intends to coordinate public involvement for the purpose of Section 106 review under the NHPA with public involvement in the EIS prepared under the Environmental Impact Analysis Process. Meetings with public, agency, and American Indian stakeholders during this scoping process will help identify the full range of reasonable alternatives, potential impacts, and key issues to be considered in the environmental impact analysis process.

4. During the scoping meetings, which will be held from 6 to 8 p.m. in an open-house format, Air Force representatives will describe the proposed action and alternatives, explain the National Environmental Policy Act (NEPA), outline opportunities for public involvement, and answer questions about the proposal. Interested parties or citizens are welcome to join the meeting at any time since information will be provided throughout the duration of the open house. The Air Force will publish notices of EIS preparation and upcoming public scoping meetings in local newspapers.

5. Public and agency comments received during the meetings, as well as written comments received by the Air Force during the scoping period and throughout the environmental process, will be considered in the preparation of the EIS. To ensure the Air Force has sufficient time to consider public input in the preparation of the Draft EIS, we are requesting that comments be submitted by March 1, 2010 to HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB VA 23665-2769, ATTN: Ms. Sheryl Parker, F-35A Ops EIS Project Manager.

6. If you or your staff has any specific questions or concerns about this proposal or desire additional information, we would like to hear from you. Our EIS project manager is Ms. Sheryl Parker, HQ ACC/A7PS and can be reached at the above address or at (757) 764-9334. Information is also available at www.airforcef-35opseis.com beginning January 19, 2010.

Sincerely



DIMASALANG F. JUNIO, Colonel, USAF
Chief, Programs Division

Attachment
Scoping Meeting Locations and Dates

Scoping Meeting Locations and Dates

Hill AFB

- Tuesday, January 19, 2010, Ogden Union Station, Wattis-Dumke Room, 2501 Wall Ave, Ogden, Utah
- Wednesday, January 20, 2010, Courtyard Marriott, Millennium A & B Rooms, 1803 Woodland Park Drive, Layton, Utah
- Thursday, January 21, 2010, Callao School, 225 Pony Express Road, Callao, Utah
- Friday, January 22, 2010, West Wendover Branch Library, 590 Camper Road, Wendover, Nevada

Burlington AGS

- Monday, January 25, 2010, O'Brien Community Center, 32 Malletts Bay Avenue, Winooski, Vermont
- Tuesday, January 26, 2010, Littleton High School (Cafeteria), 159 Oak Hill Avenue, Littleton, New Hampshire
- Thursday, January 28, 2010, Jefferson Community College, 1220 Coffeen Street, Watertown, New York

Shaw AFB/McEntire JNGB

- Monday, February 1, 2010, University of South Carolina – Sumter, Arts & Letters Building, Room 116, 200 Miller Road, Sumter, South Carolina
- Tuesday, February 2, 2010, Eastover Community Center, 624 Main Street, , Eastover, South Carolina
- Wednesday, February 3, 2010, Glen Hills High School, 2840 Glenn Hills Drive, Augusta, Georgia
- Thursday, February 4, 2010, Kingstree Senior High School, 616 Martin Luther King Jr. Avenue, Kingstree, South Carolina

Jacksonville ANG

- Monday, February 8, 2010, College of Coastal Georgia, 3700 Altama Avenue, Brunswick, Georgia ,
- Tuesday, February 9, 2010, Florida State College, 4501 Capper Road, Jacksonville, Florida
- Wednesday, February 10, 2010, South Florida Community College, 600 West College Drive, Avon Park, Florida
- Thursday, February 11, 2010, Lake Wales Public Library, 290 Cypress Gardens Lane, Lake Wales, Florida
- Friday February 12, 2010, Palatka Public Library, 601 College Road, Palatka, Florida

Mountain Home AFB

- Tuesday, February 16, 2010, Grand View Elementary, 205 1st Street, Grand View, Idaho
- Wednesday, February 17, 2010, Boise State University, Student Union Building, Barnwell Room, 1910 University Drive, Boise, Idaho
- Thursday, February 18, 2010, College of Southern Idaho Student Union Building (N. Cafeteria), 315 Falls Avenue, Twin Falls, Idaho
- Friday, February 19, 2010, Hacker Middle School, 550 East Jackson, Mountain Home, Idaho

State Historic Preservation Office IICEP Recipient List (Burlington AGS)

The following individuals received the preceding IICEP Letter

New Hampshire Division of Historical Resources
19 Pillsbury Street. 2nd Floor
Concord, NH 03301

Parks, Recreation, and Historic Preservation
Agency Building 1, Empire State Plaza
Albany, NY 12238

Vermont Division for Historic Preservation
National Life Building, Drawer 20
Montpelier, VT 05620

State Historic Preservation Office IICEP Recipient List (Hill AFB)

The following individuals received the preceding IICEP Letter

National Trust for Historic Preservation
Western Region (Nevada)
The Hearst Building
5 Third Street, Ste. 707
San Francisco, CA 94103

Utah State Historical Society
300 South Rio Grande
Salt Lake City, UT 84101

Nevada State Historic Preservation Office
100 North Stewart Street
Carson City, NV 89701

Wyoming State Historic
Preservation Office
2301 Central Avenue, Barret Building
Third Floor
Cheyenne, WY 82002

State Historic Preservation Office
100 North Stewart Street
Carson City, NV 89701

State Historic Preservation Office
100 North Stewart Street
Carson City, NV 89701

Advisory Council on Historic Preservation
12136 West Bayaud Ave., Suite 330
Lakewood, CO 80228

Utah State History Office
300 S. Rio Grande St.
Salt Lake City, UT 84101

State Historic Preservation Office IICEP Recipient List (Jacksonville AGS)

The following individuals received the preceding IICEP Letter

Florida Division of Historical Resources
500 South Bronough Street, Room 305
Tallashassee, FL 32399

State Historic Preservation Office IICEP Recipient List (Mountain Home AFB)

The following individuals received the preceding IICEP Letter

Nevada State Historic Preservation
100 North Stewart Street
Carson City, NV 89701

Idaho State Historical Society
2205 Old Penitentiary Road
Boise, ID 83712

Oregon Parks and Recreation Dept
State Historic Preservation Office
725 Summer St. NE, Suite C
Salem, OR 97301

State Historic Preservation Office IICEP Recipient List (Shaw AFB/McEntire JNGB)

The following individuals received the preceding IICEP Letter

Historic Preservation Division/
Georgia Department of Natural
Resources
34 Peachtree Street NE, Suite 1600
Atlanta, GA30303

State Historic Preservation Office
8301 Parkland Road
Columbia, SC 29223

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

HQ ACC/A7P
129 Andrews Street, Suite 102
Langley AFB VA 23665-2769

JAN 19 2010

Richard Doyle, Chairman
Passamaquoddy Tribe - Pleasant Point Reservations
P.O. Box 343
Perry, ME 04667

Dear Chairman Doyle:

The United States Air Force (Air Force) is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of basing operational F-35 aircraft at one or more Air Force installations within the continental United States. The F-35 is the next generation strike aircraft designed for the Air Force, Navy, Marines and our international allies. The Air Force variant of the F-35, designated F-35A, will supplement and replace legacy aircraft. Basing alternatives being considered include: Mountain Home Air Force Base (AFB), Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina; and Jacksonville AGS, Florida. For Mountain Home AFB, Hill AFB, and Shaw AFB, the potential environmental impacts will be analyzed for no action and for basing scenarios of 24 primary assigned aircraft (PAA), 48 PAA, and 72 PAA. For Burlington AGS, McEntire JNGB, and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and basing scenarios of 18 and 24 PAA. At any of the alternative basing locations, the proposed action would involve personnel changes, facility construction, demolition, and/or modifications, and aircraft training operations.

As part of the EIS process, the Air Force is initiating Government-to-Government consultation regarding the proposed action. The Air Force will hold a series of scoping meetings to solicit tribal, public and government agency comments on the proposal to assist us in shaping the analysis. Locations and dates of scoping meetings are shown in Attachment 2. Meeting locations will be announced in the *Federal Register* and in local newspapers approximately one week prior to start of the meetings specific to each basing alternative.

The scoping meetings will be in held in an open-house format. Air Force representatives will describe the proposed action and alternatives and explain the National Environmental Policy Act (NEPA) process. We also will answer questions about the proposal, document comments, and outline further opportunities for public involvement. The meetings will last from 6 to 8 pm at all locations. Participants are welcome to join the meeting at any time since information will be provided throughout the duration of the open house. The Air Force will publish notices of EIS preparation and upcoming public scoping meetings in local newspapers.

We look forward to receiving your comments as part of this process and are requesting that comments be submitted by March 1, 2010 to HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB VA 23665-2769, ATTN: Ms. Sheryl Parker, F-35A Ops EIS Project Manager.

If you or your staff has any specific questions or concerns about this proposal or desire additional information, we would like to hear from you. Our EIS project manager is Ms. Sheryl Parker, HQ ACC/A7PS and can be reached at the above address or at (757) 764-9334. Information is also available at www.airforcef-35opseis.com beginning January 19th 2010.

Sincerely

DAVE C. HOWE
Brigadier General, USAF
Director, Installations and Mission Support

Attachment:
Scoping Meeting Locations and Dates

Scoping Meeting Locations and Dates

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Burlington AGS

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- Thursday, January 28, 2010, Jefferson Community College, 1220 Coffeen Street, Watertown, New York

Shaw AFB/McEntire JNGB

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Jacksonville ANG

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Mountain Home AFB

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- Thursday, February 18, 2010, College of Southern Idaho Student Union Building (N. Cafeteria), 315 Falls Avenue, Twin Falls, Idaho
- Friday, February 19, 2010, Hacker Middle School, 550 East Jackson, Mountain Home, Idaho

Victoria Higgins, Chairman
Aroostook Band of Micmacs
7 Northern Road
Presque Isle, ME 04769

Judy Dow, Commission Member
Vermont Commission on Native American Affairs
273 Old Stage Road
Essex Junction, VT 05452

Dawn Macie, c/o Mark Mitchell
The Clan of the Hawk
123 Evansville Road
Brownington, VT 05860

Paul Pouliot, President
Cowasuck Band of the Pennacook-Abenaki People
COWASS North America, Inc.
P.O. Box 52
Alton, NH 03890

William Nicholas, Chairman
Passamaquoddy Tribe - Indian Township Reservations
P.O. Box 301
Princeton, ME 04668

Brenda Commander, Chairman
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730

April St. Francis-Merril, Chairman
St. Francis/Sokoki Abenaki, Band of the Missisquoi Abenaki
P.O. Box 276
Swanton, VT 05488

Kirk Francis, Chairman
Penobscot Indian Nation
12 Wabanaki Way
Indian Island, ME 04468

Mark Mitchell, Chairman
Vermont Commission on Native American Affairs
1374 Old Silo Road
St. Johnsbury, VT 05819

Peggy Fullerton, Chairman
Koasek Traditional Band of the Abenaki Nation
P.O. Box 42
Newbury, VT 05060

American Indian Tribe IICEP Recipient List (Hill AFB)

The following individuals received the preceding IICEP Letter

Bruce Parry, Chairperson
Northwestern Band of Shoshone Nation
707 North Main St.
Brigham City, UT 84302

Julie Stevens, Vice- Chairperson
Wells Band Council
P.O. Box 809
Wells, NV 89835

Joe Kennedy, Chairman
Timbisha Shoshone Tribe
P.O. Box 786
Bishop, CA 93514

Mary Jane Boone, Chairman
San Juan Southern Paiute Tribe
P.O. Box 1989
Tuba City, AZ 86045

Joe Shirley, President
Navajo Nation
P.O. Box 9000
Window Rock, AZ 86515

Carl Venne, Chairman
Crow Tribe of Montana
P.O. Box 159
Crow Agency, MT 59022

Willie Sharp, Chairman
Blackfeet Tribe
P.O. Box 850
Browning, MT 59417

Lawrence Bear, Chairman
Skull Valley Band of Goshute Indians
P.O. Box 448
Grantsville, UT 84029

Alonzo Coby, Chairman
Shoshone-Bannock Tribes of the Fort Hall Reservation
P.O. Box 306
Fort Hall, ID 83203

Barbara Durham, THPO
Timbisha Shoshone Tribe
P.O. Box 206
Death Valley, CA 92328

Ivan Posey, Chairman
Eastern Shoshone Tribe
P.O. Box 538
Fort Washakie, WY 82514

Ernest House, Sr., Chairperson
Ute Mountain Ute Tribe
P.O. Box 248
Towaoc, CO 81334

Robert Bear, Chairman
Shoshone-Paiute Tribes of the Duck Valley Reservation
P.O. Box 219
Owyhee, NV 89832

Leroy Ned Shingoitewa, Chairman
Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

Curtis Cesspooch, Chairperson
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, UT 84026

Rupert Steele, Chairman
Confederated Tribes of the Goshute Indian Reservation
P.O. Box 6104
Ibapah, UT 84034

Brian Cassadore, Chairperson
Te-Moak Tribe of Western Shoshone
525 Sunset Street
Elko, NV 89801

Anthony Addison, Sr., Chairman
Northern Arapaho Tribe
P.O. Box 396
Fort Washakie, WY 82514

James Steele, Jr., Chairman
Confederated Salish & Kootenai Tribes of the Flathead Reservation
P.O. Box 278
Pablo, MT 59855

Norman Cooeyate, Governor
Pueblo of Zuni
P.O. Box 339
Zuni, NM 87327

Janine Borchardt, Chairperson
Paiute Indian Tribe of Utah
440 North Paiute Drive
Cedar City, UT 84720

Mary Jane Yazzie, Director
White Mesa Ute Council
P.O. Box 7096
Blanding, UT 84511

American Indian Tribe IICEP Recipient List (Jacksonville AGS)

The following individuals received the preceding IICEP Letter

Big Cypress Indian
The Seminole Tribe of Florida
6300 Stirling Road
Hollywood, FL 33024

American Indian Tribe IICEP Recipient List (Mountain Home AFB)

The following individuals received the preceding IICEP Letter

Alonzo Coby, Chairman
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

Bruce Parry, Chairman
Northwestern Band, Shoshone
Brigham City Tribal Office
707 N. Main St.
Brigham City, UT 84302

Robert Bear, Chairman
Shoshone-Paiute Tribes of Duck Valley
P.O. Box 219
Owyhee, NV 89832

Arlo Crutcher, Chairman
Paiute-Shoshone Tribes of Fort McDermitt
P.O. Box 457
McDermitt, NV 89421

Wanda Johnson, Chairman
Burns Paiute Tribe
H.C. 71, 100 Pasigo St.
Burns, OR 97720

American Indian Tribe IICEP Recipient List (Shaw AFB/McEntire JNGB)

The following individuals received the preceding IICEP Letter

Donald Rodgers, Chairman
Catawba Indian Nation
P.O. Box 11106
Rock Hill, SC 29731

Caitlin Haire, Tribal Historic
Preservation Officer
1537 Tom Steven Rd
Rock Hill, SC 29730

Bryan Hall, SCMD Tribal Liaison
SC Military Dept
5401 Leesburg Rd Bldg 3924
Eastover, SC 29044

Wenonah Haire, Tribal Historic
Preservation Officer
1536 Tom Steven Rd
Rock Hill, SC 29730

Draft EIS
NOTICE OF AVAILABILITY

20006; E C/R Inc., 501 Eastowne Drive, Suite 250, Chapel Hill, NC 27514; Emission Monitoring, Inc., 8901 Glenwood Avenue, Raleigh, NC 27617; Noblis, 3150 Fairview Park Drive, Falls Church, VA 22042; Powersolv, Inc., 1801 Robert Fulton Drive, Reston, VA 20191; V3 Technical Services, 2210 Award Winning Way, Suite 202, Knoxville, TN 37932; Melanie LaCount, 9511 Kingsley Avenue, Bethesda, MD 20814; and Quarles Consulting LLC, 1280 Inglecress Drive, Charlottesville, VA 22901.

Under Contract Number EP–W–07–068 Task Order 108, ICF International, 9300 Lee Highway, Fairfax, VA 22031, provides technical support that requires access to information designated or claimed as CBI related to the GHGRP, including, but not limited to, 40 CFR part 98, subpart W. Access to data, including information designated or claimed as CBI, will commence no sooner than April 19, 2012 and will continue until the termination of this contract. If the contract is extended, this access will continue for the remainder of the contract and any further extensions without further notice.

Under Contract Number EP–W–07–068 Task Order 91, the subcontractors, Transcarbon International, 1 Penn Plaza Suite 6110, New York, NY 10119, and Dr. C. Shepherd Burton, 2047 Huckleberry Rd., San Rafael, CA 94903, provide technical support that requires access to information designated or claimed as CBI related to the GHGRP, including, but not limited to, 40 CFR part 98 subpart I. Access to data, including information designated or claimed as CBI, will commence no sooner than April 19, 2012 and will continue until the termination of this contract. If the contract is extended, this access will continue for the remainder of the contract and any further extensions without further notice.

Under Contract Number GS–10F–0036K, the subcontractor Transcarbon International, 1 Penn Plaza Suite 6110, New York, NY 10119, provides technical support that requires access to information designated or claimed as CBI related to the GHGRP, including, but not limited to, 40 CFR part 98 subpart I. Access to data, including information designated or claimed as CBI, will commence no sooner than April 19, 2012 and will continue until the termination of this contract. If the contract is extended, this access will continue for the remainder of the contract and any further extensions without further notice.

Under Contract Number GS–10F–0124J Delivery Order EP11H000308, ICF International, 9300 Lee Highway, Fairfax, VA 22031, provides technical support that requires access to information designated or claimed as CBI related to the GHGRP, including, but not limited to, 40 CFR part 98, subparts L, O, OO and QQ. Access to data, including information designated or claimed as CBI, will commence no sooner than April 19, 2012 and will continue until the termination of this contract. If the contract is extended, this access will continue for the remainder of the contract and any further extensions without further notice.

Parties who wish further information about this **Federal Register** notice or about OAP's disclosure of information designated or claimed as CBI to contactors may contact the person listed under **FOR FURTHER INFORMATION CONTACT.**

Dated: April 5, 2012.

Sarah Dunham,

Director, Office of Atmospheric Programs.

[FR Doc. 2012–8923 Filed 4–12–12; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9002–5]

Environmental Impacts Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–7146 or *http://www.epa.gov/compliance/nepa/.*

Weekly receipt of Environmental Impact Statements

Filed 04/02/2012 Through 04/06/2012 Pursuant to 40 CFR 1506.9

Notice

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at:*http://www.epa.gov/compliance/nepa/eisdata.html.*

EIS No. 20120098, Draft EIS, USAF, 00, F–35A Operational Basing, Beddown and Operation of F–35A Aircraft for the Combat Air Forces at One or More Locations throughout the Contiguous U.S. from 2015 through 2020, *Comment Period Ends:* 06/04/2012, *Contact:* Nicholas Germanos 757–764–5994.

EIS No. 20120099, Draft EIS, BLM, CA, Desert Harvest Solar Project, Construction, Operation, Maintenance, and Decommissioning of a 150-megawatt Photovoltaic Solar Energy Facility and Generation-Intertie Transmission Line, Consideration of Issuance of a Right-of-Way Grant, Riverside County, CA, *Comment Period Ends:* 07/13/2012, *Contact:* Lynnette Elser 951–697–5233.

EIS No. 20120100, Final EIS, NRC, WA, Generic—License Renewal of Nuclear Plants, Supplement 47 Regarding Columbia Generating Station (NUREG–1437), Issuance of a Renewed Operating License for an Additional 20 Years, Benton County, WA, *Review Period Ends:* 05/14/2012, *Contact:* Paula Cooper 301–415–2323.

EIS No. 20120101, Draft EIS, USACE, MS, Pascagoula Lower Sound/Bayou Casotte Channel Widening, Issuance of a Permit to Dredge or Excavate Adjacent to a Federal Navigation Channel in or Affecting Navigable Waters of the U.S., Jackson County, MS, *Comment Period Ends:* 05/29/2012, *Contact:* Philip Hegji 251–690–3222.

EIS No. 20120102, Final Supplement, USFS, MT, Young Dodge Project, Proposed Timber Harvest and Associate Activities, Updated Information on the First 3 Alternatives, Prescribed Burning, Road and Recreation Management, Kootenai National Forest, Rexford Ranger District, Lincoln County, MT, *Review Period Ends:* 05/14/2012, *Contact:* Moira McKelvey 406–296–2536.

Amended Notices

EIS No. 20120078, Second Draft Supplement, FHWA, TX, Trinity Parkway Project, Construction of a Six-Lane Controlled Access Toll Facility from IH–35 E/TX–183 to US–175/TX–310, Additional Information on the Compatibility with Levee Remediation Plans for the Dallas Floodway and New Information on Historic Resources, U.S. Army COE Section 10 and 404 Permits, Dallas County, TX, *Comment Period Ends:* 05/18/2012, *Contact:* Salvador Deocampo 512–536–5950 Revision to FR Notice Published 03/23/2012: Extending Comment Period from 5/7/2012 to 5/18/2012.

Dated: April 10, 2012.

Cliff Rader,

Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. 2012–8929 Filed 4–12–12; 8:45 am]

BILLING CODE 6560–50–P

EXTENSION OF PUBLIC COMMENT PERIOD

D. Estimate of whether the proposed solution would cost the state additional funding, and if so an approximation of how much.

E. Your contact information so that we can follow-up if we need any clarifications.

Dated: May 16, 2012.

Patricia L. Toppings,

OSD Federal Register, Liaison Officer, Department of Defense.

[FR Doc. 2012–12419 Filed 5–22–12; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Air Force

Notice To Extend Public Comment Period for United States Air Force F–35A Operational Basing Environmental Impact Statement

AGENCY: The United States Air Force, DoD.

ACTION: Notification of Extension of Public Comment Period.

SUMMARY: The U.S. Air Force is issuing this notice to advise the public of an extension to the public comment period. The initial Notice of Availability published in the **Federal Register** on April 13, 2012 (Vol. 77, No. 72/Notices/22315) requested public comments no later than June 4, 2012. The Air Force has extended the deadline for submitting public comments to June 20, 2012. All substantive comments on the Draft EIS received during the public comment period will be considered in the preparation of the Final EIS.

FOR FURTHER INFORMATION CONTACT: Please direct any written comments or requests for information to Mr. Nicholas Germanos, ACC/A7PS, 129 Andrews St., Suite 332, Langley AFB, VA 23665, ph: 757–764–9334.

Henry Williams Jr.,

DAF, Acting Air Force Federal Register Liaison Officer.

[FR Doc. 2012–12458 Filed 5–22–12; 8:45 am]

BILLING CODE 5001–10–P

DENALI COMMISSION

Fiscal Year 2012 Draft Work Plan

AGENCY: Denali Commission.

ACTION: Notice; Correction.

SUMMARY: The Denali Commission (Commission) is an independent federal agency based on an innovative federal-state partnership designed to provide critical utilities, infrastructure and support for economic development and in training in Alaska by delivering federal services in the most cost-effective manner possible. The Commission was created in 1998 with passage of the October 21, 1998 Denali Commission Act (Act) (Title III of Public Law 105–277, 42 USC 3121). The Denali Commission Act requires that the Commission develop proposed work plans for future spending and that the annual Work Plan be published in the **Federal Register**, providing an opportunity for a 30-day period of public review and written comment. The Commission is republishing the May 17, 2012 notice in full with corrections included.

This **Federal Register** notice serves to announce the 30-day opportunity for public comment on the Denali Commission Draft Work Plan for Federal Fiscal Year 2012.

DATES: Comments and related material to be received by June 20, 2012.

ADDRESSES: Submit comments to the Denali Commission, Attention: Sabrina Hoppas, 510 L Street, Suite 410, Anchorage, AK 99501.

FOR FURTHER INFORMATION CONTACT: Ms. Sabrina Hoppas, Denali Commission, 510 L Street, Suite 410, Anchorage, AK 99501. Telephone: (907) 271–1414. Email: *shoppas@denali.gov*.

Background

The Denali Commission (Commission) is an independent federal agency based on an innovative federal-state partnership designed to provide critical utilities, infrastructure and support for economic development and training in Alaska by delivering federal services in the most cost-effective manner possible. The Commission was created in 1998 with passage of the October 21, 1998, Denali Commission Act (Act) (Title III of Pub. L. 105–277, 42 USC 3121).

The Commission's mission is to partner with tribal, federal, state, and local governments and collaborate with all Alaskans to improve the effectiveness and efficiency of government services, to develop a well-trained labor force employed in a diversified and sustainable economy, and to build and ensure the operation and maintenance of Alaska's basic infrastructure.

By creating the Commission, Congress mandated that all parties involved partner together to find new and innovative solutions to the unique infrastructure and economic development challenges in America's most remote communities.

Pursuant to the Denali Commission Act, as amended, the Commission determines its own basic operating principles and funding criteria on an annual federal fiscal year (October 1 to September 30) basis. The Commission outlines these priorities and funding recommendations in an annual Work Plan. The Work Plan is adopted on an annual basis in the following manner, which occurs sequentially as listed:

- Commissioners first forward an approved draft version of the Work Plan to the Federal Co-Chair.
- The Federal Co-Chair approves the draft Work Plan for publication in the **Federal Register** providing an opportunity for a 30-day period of public review and written comment. During this time, the draft Work Plan is also disseminated widely to Commission program partners including, but not limited to the Bureau of Indian Affairs (BIA), the Economic Development Administration (EDA), and the United States Department of Agriculture—Rural Development (USDA–RD).
- Public comment concludes and Commission staff provides the Federal Co-Chair with a summary of public comment and recommendations, if any, associated with the draft Work Plan.
- If no revisions are made to the draft, the Federal Co-Chair provides notice of approval of the Work Plan to the Commissioners, and forwards the Work Plan to the Secretary of Commerce for approval; or, if there are revisions the Federal Co-Chair provides notice of modifications to the Commissioners for their consideration and approval, and upon receipt of approval from Commissioners, forwards the Work Plan to the Secretary of Commerce for approval.
- The Secretary of Commerce approves the Work Plan.

FY 2012 Annual Work Plan (Amended)

In FY 2011, the typical annual Work Plan process was not carried out. Several factors contributed to this including continuing resolutions (CRs) passed by Congress late in the fiscal year resulting in latent consideration of the FY 2011 annual Work Plan by the Commissioners (Commissioners met on June 2, 2011 to consider the FY 2011 annual Work Plan). In addition, the final FY 2011 budget included a rescission of $15,000,000 in prior year unobligated funds and uncertainty on how the rescission may impact the FY 2011 Work Plan was not resolved until September 2011.

With concurrence from the Office of Management and Budget (OMB) and the Secretary of Commerce, the amended FY 2011 Work Plan will be processed concurrently with the FY 2012 Work

Revised Draft EIS
NOTICE OF AVAILABILITY

utilized for bypass flows. The powerhouse would be equipped with a single 2.1-megawatt Francis turbine. The project would also consist of a switchyard and 900 feet of proposed 15-kilovolt transmission line that would interconnect into the utility distribution system owned by NV Energy. The project would generate an estimated 16.5 gigawatt-hours annually.

Applicant Contact: Mr. Ted S. Sorenson, P.E., Sorenson Engineering, 5203 S. 11th East, Idaho Falls, Idaho 83404; phone: (208) 522–8069.

FERC Contact: Mary Greene; phone: (202) 502–8865.

Deadline for filing comments, motions to intervene, competing applications (without notices of intent), or notices of intent to file competing applications: 60 days from the issuance of this notice. Competing applications and notices of intent must meet the requirements of 18 CFR § 4.36. Comments, motions to intervene, notices of intent, and competing applications may be filed electronically via the Internet. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's Web site *http://www.ferc.gov/docs-filing/efiling.asp.* Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at *http://www.ferc.gov/docs-filing/ecomment.asp.* You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at *FERCOnlineSupport@ferc.gov* or toll free at 1–866–208–3676, or for TTY, (202) 502–8659. Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, mail an original and five copies to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

More information about this project, including a copy of the application, can be viewed or printed on the ''eLibrary'' link of Commission's Web site at *http://www.ferc.gov/docs-filing/elibrary.asp.* Enter the docket number (P–14468) in the docket number field to access the document. For assistance, contact FERC Online Support.

Dated: May 23, 2013.

Kimberly D. Bose,

Secretary.

[FR Doc. 2013–12890 Filed 5–30–13; 8:45 am]

BILLING CODE 6717–01–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9009–4]

Environmental Impacts Statements; Notice of Availability

RESPONSIBLE AGENCY: Office of Federal Activities, General Information (202) 564–7146 or *http://www.epa.gov/compliance/nepa/.*

Weekly receipt of Environmental Impact Statements Filed 05/20/2013 Through 05/24/2013 Pursuant to 40 CFR 1506.9.

Notice

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *http://www.epa.gov/compliance/nepa/eisdata.html.*

EIS No. 20130138, Draft EIS, USACE, CA, Westbrook Project (SPK–2005–00938), Comment Period Ends: 07/15/2013, Contact: Kathy Norton 916–557–5260

EIS No. 20130139, Second Final Supplement, USFWS, 00, Issuance of Annual Regulations Permitting the Hunting of Migratory Birds, Review Period Ends: 07/01/2013, Contact: Robert Trost 503–231–6162

EIS No. 20130140, Draft EIS, USFS, WY, Sherman Cattle and Horse Allotment Grazing Authorization and Management, Comment Period Ends: 07/15/2013, Contact: Chad Hayward 307–276–5817

EIS No. 20130141, Final EIS, USFS, SC, AP Loblolly Pine Removal and Restoration Project, Review Period Ends: 07/01/2013, Contact: Victor Wyant 864–638–9568

EIS No. 20130142, Draft EIS, HUD, NY, Hallets Point Rezoning, Comment Period Ends: 07/15/2013, Contact: Robert Dobruskin 212–720–3423

EIS No. 20130143, Revised Draft EIS, USAF, UT, United States Air Force F–35A Operational Basing, Beddown at one or more Air Combat Command or Air National Guard Bases, Comment Period Ends: 07/15/2013, Contact: Nicholas Germanos 757–764–5007

EIS No. 20130144, Final EIS, NPS, CO, Grand Ditch Breach Restoration, Review Period Ends: 07/01/2013, Contact: Ben Bobowski 970–586–1350

EIS No. 20130145, Draft EIS, USAF, AK, Proposal to Relocate the 18th Aggressor Squadron from Eielson Air Force Base (EAFB), Alaska to Joint Base Elmendorf-Richardson, Alaska and to Right-Size the Remaining Wing Overhead/Base Operating Support at EAFB, Alaska, Comment Period Ends: 07/30/2013, Contact: Allen Richmond 210–395–8555

EIS No. 20130146, Final EIS, USFS, CA, Whisky Ridge Ecological Restoration Project, Review Period Ends: 07/01/2013, Contact: Dean A. Gould 559–297–0706

EIS No. 20130147, Final EIS, TVA, TN, Dam Safety Modifications at Cherokee, Fort Loudoun, Tellico, and Watts Bar Dams, Review Period Ends: 07/01/2013, Contact: Charles P. Nicholson 865–632–3582

EIS No. 20130148, Draft Supplement, USACE, FL, Jacksonville Harbor Navigation, Comment Period Ends: 07/15/2013, Contact: Samantha Borer 904–232–1066

Amended Notices

EIS No. 20130133, Draft EIS, BLM, CO, Dominguez-Escalante National Conservation Area Draft Resource Management Plan, Comment Period Ends: 08/15/2013, Contact: Samantha Staley 970–244–3188, Revision to FR Notice Published 05/24/2013; Extending Comment Period from 8/15/2013 to 8/22/2013

Dated: May 28, 2013

Cliff Rader

Director, NEPA Compliance Division Office of Federal Activities.

[FR Doc. 2013–12965 Filed 5–30–13; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–9819–2]

Notification of a Public Teleconference of the Great Lakes Advisory Board

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: The Environmental Protection Agency (EPA) announces a public teleconference of the Great Lakes Advisory Board (GLAB). The purpose of the teleconference is to continue discussions that will inform the development of a draft Great Lakes Restoration Initiative FY 2015–2019 Action Plan.

DATES: The public teleconference will be held on Wednesday, June 12, 2013 from 9:00 a.m. to 10:30 a.m. The teleconference numbers is: (877) 226–9607; Participant code: 4218582837. Due to budgetary uncertainties, EPA is announcing this teleconference with less than 15 calendar days public notice.

ADDRESSES: The public teleconference will take place by telephone only.

Appendix B

CONSULTATION

STATE HISTORIC PRESERVATION OFFICES

SHPO CONSULTATION

In accordance with Section 106 of the National Historic Preservation Act (United States Code of Federal Regulation 800.3), letters initiating informal consultation were sent in January 2010 to the relevant State Historic Preservation Offices (SHPOs) notifying them that the Air Force planned to base operational F-35A aircraft at one or more Air Force installations in the continental United States. The letters included information on the basing alternatives considered in the analysis and requested feedback on the proposal. In March 2012, the SHPOs were sent the Draft Environmental Impact Statement with a request for comments. Any responses received in association with the Draft EIS were included in Appendix B of the Revised Draft EIS. During the summer and fall of 2012, another letter of informal consultation was sent and requested the SHPOs respond as to whether they agreed with the Air Force determination of no effect to the Area of Potential Effect. In July 2013, a Revised Draft EIS was distributed to all SHPOs requesting their response as to whether they concurred with the determination of no adverse effects in the APE. In addition to these efforts, numerous phone calls were made from the fall 2012 through summer 2013 to solicit feedback from the SHPOs and met with limited success. Therefore, in accordance with 36 CFR 800.4(d)(1) *No historic properties affected*. "If the agency official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in § 800.16(i), the agency official shall provide documentation of this finding, as set forth in § 800.11(d), to the SHPO/THPO. The agency official shall notify all consulting parties, including Indian tribes and Native Hawaiian organizations, and make the documentation available for public inspection prior to approving the undertaking. (i) If the SHPO/THPO, or the Council if it has entered the section 106 process, does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under section 106 are fulfilled." The Air Force has undertaken the steps outlined above, specific to 36 CFR 800.11(d) and (i).

Tables 1 through 5 outline the status of consultation by basing location. McEntire JNGB and Shaw AFB are presented together because the Area of Potential Effect is the same.

BURLINGTON AGS

Table 1. Burlington AGS State Historic Preservation Office Consultation Letters				
Addressee	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Maine Historic Preservation Commission 55 Capital Street, Station 65 Augusta, ME 04333	Yes (8/29/2012)	Yes (10/12/2012)	Yes (10/12/2012)	Concurred that the project will not adversely affect historic properties. Consultation concluded.
New Hampshire Division of Historical Resources 19 Pillsbury Street, 2nd Floor Concord, NH 03301	Yes (1/19/2010)	Yes (2/8/2010)	Yes (2/8/2010)	NH SHPO stamped and signed the initial 1/19/10 scoping letter with "No known Historic Resources" and Signed on 2/8/10. Consultation concluded.
New York Parks, Recreation, and Historic Preservation Agency Building 1 Empire State Plaza Albany, NY 12238	Yes (11/13/2012)	Yes, by phone	Yes (4/16/2012)	Phone conversation indicated that they were likely not to have concerns; however, no official concurrence received. Follow-on phone call on 4/16/12 did not elicit any further comments. Consultation concluded.
Vermont Division for Historic Preservation National Life Building Drawer 20 Montpelier, VT 05620	Yes (4/16/2013)	Yes (4/16/2013)	Yes (7/17/2013)	The Air Force received verbal response that SHPO conditionally concurred with Air Force conclusion of no adverse effects; however, they would withhold official determination until review of the next version of the EIS. Received official concurrence of no adverse effects to APE on July 17, 2013. Consultation concluded.

VERMONT

State of Vermont
Division for Historic Preservation
One National Life Drive, Floor 6
Montpelier, VT 05620-0501
www.HistoricVermont.org

[phone] 802-828-3211
[division fax] 802-828-3206

Agency of Commerce and Community Development

July 15, 2013

Mr. Nick Germanos
F-35A EIS Project Manager
HQ ACCA/A7PS
129 Andrews Street
Suite 102 (Room 337)
Hampton, VA 23665-2769

Re: F-35A Operational Wing Beddown Draft Environmental Impact Statement
Burlington Air Guard Station
DOD

Dear Mr. Germanos:

Thank you for the opportunity to comment on the above-referenced project involving the Department of the Air Force (DHP #CH11-070). We received a copy of the revised Environmental Impact Statement (EIS) on June 24, 2013, and are submitting these written comments for your consideration.

The Division for Historic Preservation is reviewing this proposed undertaking pursuant to 36 CFR 800.4, regulations established by the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act. Project review consists of identifying the project's potential impacts to historic buildings and structures, historic districts, historic landscapes and settings, and to known or potential archeological resources.

While reviewing the revised EIS, we noted the following statement regarding our review of the project to date:

- Volume I, page BR4-13, Section BR2.4: It is stated that: "The Vermont SHPO verbally concurred in April 2013 with the Air Force conclusion of no adverse effects to the APE." A similar statement appears in Volume II, Appendix B, page B-4, Table 1.

This is not an accurate statement, as the Vermont SHPO did not verbally concur with the "no adverse effect" determination in April 2013. Our regulatory review of this project has been ongoing since January 2010, and we did not reach a final determination effect until receiving and reviewing the most recent EIS.

The Section 106 review process consists of identifying the project boundaries; identifying historic properties within those boundaries; and evaluating potential effects on those historic properties. The EIS identifies the Area of Potential Effects (APE) for the Burlington Air Guard Station (Burlington AGS) as all areas of ground disturbance associated with the project, as well as aircraft operations and the areas affected by noise levels 65 dB DNL and greater. None of the structures within the boundaries of the Burlington AGS are eligible for listing in the National Register of Historic Places (NRHP). Several archeological sites within the boundaries of the Burlington AGS are eligible for listing in the NRHP, but will not be affected by construction related to the project.

The APE extending beyond the boundaries of the Burlington AGS includes significant portions of the cities of Winooski and South Burlington. With regard to historic structures, Volume I, page BR4-62, Section BR3.9.1.1 states that under ANG Scenarios 1 and 2 only "two NRHP-listed sites would be exposed to noise levels 65 dB DNL and greater: a portion of the Winooski Falls Mill District and a portion of the Winooski Falls Mill Historic District (boundary increase)."

In addition to the Winooski Falls Mill Historic District, the following resources in Winooski are also listed in the NRHP and fall within the 65 dB DNL contour for both ANG Scenarios 1 and 2:

- LeClair Avenue Historic District, listed 4/2/2012
- Methodist Episcopal Church of Winooski, listed 3/2/2001
- Old Stone House, listed 5/8/1973
- Porter Screen Company, listed 11/15/1979
- Winooski Block, listed 11/20/1974

As stated in the EIS Volume I, page 3-35, Section 3.10.2, effects on "cultural resources with standing structures that are listed on or eligible for listing on the NRHP…were considered." This methodology is further refined in the EIS to focus on potential effects on resources that are listed in the NRHP, with the assumption that similar effects would apply to resources that are eligible for listing in the NRHP. Given the large number of resources located under the airspace, the majority of which have not been evaluated for NRHP eligibility, it is reasonable to consider effects on listed resources only and apply the resulting determination of effects to the broader group of resources, which includes potentially eligible resources, under the airspace.

When evaluating potential effects on historic resources, we consider both direct (physical destruction or alteration) and indirect (visual, atmospheric or audible) effects. As stated above, there will be no direct effects on buildings at the Burlington AGS because none of them are listed or eligible for listing in the NRHP. As for indirect effects, the introduction of audible elements should be taken into consideration. The historic resources located under the airspace, however, are significant for their architectural and/or historic associations and are located in developed urban areas. The presence of aircraft within the airspace over these areas is long established, and the proposed project will not introduce audible elements that are not already present. As such, the audible elements related to the undertaking will not diminish the integrity of historically significant features of resources located under the airspace.

After reviewing the revised EIS, and specifically the information regarding environmental consequences in Volume I, pages BR4-62 through 64, Section BR3.2.9.1, as well as information regarding noise effects on structures in Volume II, pages C-51 through 72, Section C2.8, it is our opinion that there will be no adverse effects on historic resources as result of the proposed undertaking.

If you have any questions or need clarification regarding any of the above, please do not hesitate to contact Devin Colman, State Architectural Historian, at devin.colman@state.vt.us or 802-828-3043. Mr. Colman reviewed this project and prepared this letter. I concur with the findings and conclusions described above.

Sincerely,
VERMONT DIVISION FOR HISTORIC PRESERVATION

Lawrence Miller, Secretary
Agency of Commerce and Community Development

Cc: Noelle MacKay, Department of Housing and Community Development

DEPARTMENT OF THE AIR FORCE
158TH FIGHTER WING (ACC)
SOUTH BURLINGTON VERMONT

* More info rec'd Oct 3 & 9, 2012

RECEIVED
SEP 04 2012 *
By 0140-10

29 August 2012

158FW/EM
Vermont Air National Guard
105 NCO Drive
South Burlington, VT 05403-5873

Maine Historic Preservation Commission
55 Capital Street, Station 65
Augusta, ME 04333

As proposed, the project will not adversely affect historic properties. Pursuant to 800.5(c), if no consulting parties object to this finding within the 30-day review period, the project may proceed, as proposed, unless resources are discovered during project implementation pursuant to 800.13.

Kirk F. Mohney, 10/12/12
Kirk F. Mohney, Date
Deputy State Historic Preservation Officer

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The Draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated the Section 106 process of the National Historic Preservation Act (NHPA) with your agency in a letter dated January 19, 2010. The purpose of this correspondence is to provide your agency with an update of the status of the EIS process for this action, and to request that you submit any comments or questions you may have at this time.

3. The Draft EIS references cultural and historic resource surveys that have been conducted at the Burlington Air Guard Station to date. Potential impacts have been analyzed for no action and beddown scenarios of 18 and 24 F-35A aircraft, which would replace the existing F-16 aircraft located at the installation. Renovation of existing structures would be required under the proposal. No ground disturbance is anticipated for the renovations, and no historic properties would be adversely impacted by either of the beddown scenarios.

4. Selection of Burlington Air Guard Station for 18 or 24 F-35A operational aircraft would not result in impacts to airspace use and management throughout this region (see figure 1). This proposed action would not require any changes to the current lateral or vertical configuration of the airspace units, nor would it alter their normally scheduled times of use. Based on an average of 260 flight training days per year, there would be a net decrease in daily average operations from 11 to 9 if 18 F-35A aircraft were based in Burlington. If 24 F-35A aircraft were based in Burlington, the daily average number of operations in the airspace would remain at 11. In addition, the F-35A would conduct a greater percentage of training at higher altitudes than the F-16.

5. The Air Force has continued government-to-government consultation with American Indian stakeholders regarding the F-35A beddown proposal, including a follow-on letter dated 17 August, 2012 to the Tribes listed in Appendix B, Volume II of the Draft EIS.

6. If you or your staff have any specific questions or concerns about this proposal, or desire additional information, please contact me at (802) 660-5966, at adam.wright@ang.af.mil or via US mail: Vermont Air National Guard, 30 Falcon Street, South Burlington, VT 05403, ATTN: Adam Wright.

#1676
NH/VT

RECEIVED JAN 22 2010

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

JAN 19 2010

MEMORANDUM FOR New Hampshire Division of Historical Resources
19 Pillsbury Street. 2nd Floor
Concord, NH 03301

FROM: HQ ACC/A7P
129 Andrews Street
Langley AFB VA 23665-2769

SUBJECT: F-35A Operational Basing Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of basing operational F-35 aircraft at one or more Air Force installations within the continental United States. The F-35 is the next generation strike aircraft designed for the Air Force, Navy, Marines and our international allies. The Air Force variant of the F-35, designated F-35A, will supplement and replace legacy aircraft. Basing alternatives being considered include: Mountain Home Air Force Base (AFB), Idaho; Hill AFB, Utah; Burlington Air Guard Station (AGS), Vermont; Shaw AFB/McEntire Joint National Guard Base (JNGB), South Carolina; and Jacksonville AGS, Florida. For Mountain Home AFB, Hill AFB, and Shaw AFB, the potential environmental impacts will be analyzed for no action and for basing scenarios of 24 primary assigned aircraft (PAA), 48 PAA, and 72 PAA. For Burlington AGS, McEntire JNGB, and Jacksonville AGS, the potential environmental impacts will be analyzed for no action and basing scenarios of 18 and 24 PAA. At any of the alternative basing locations, the proposed action would involve personnel changes, facility construction, demolition, and/or modifications, and aircraft training operations.

2. The purpose of this correspondence is to initiate the Section 106 process of the National Historic Preservation Act (NHPA) of 1966 (as amended) in the potentially affected areas. We are in the early stages of gathering information concerning previous archaeological and historic studies for the areas under the affected region. We would appreciate any assistance you could provide in identifying and retrieving this important information, as well as concerns you may have about the potential effects of the proposal on significant cultural resources.

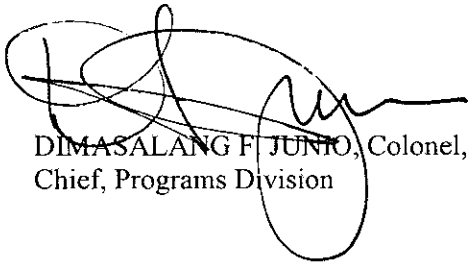
3. The Air Force will host public scoping meetings in communities near the proposed beddown locations. Scoping meeting dates and locations are attached. The Air Force intends to coordinate public involvement for the purpose of Section 106 review under the NHPA with public involvement in the EIS prepared under the Environmental Impact Analysis Process. Meetings with public, agency, and American Indian stakeholders during this scoping process will help identify the full range of reasonable alternatives, potential impacts, and key issues to be considered in the environmental impact analysis process.

4. During the scoping meetings, which will be held from 6 to 8 p.m. in an open-house format, Air Force representatives will describe the proposed action and alternatives, explain the National Environmental Policy Act (NEPA), outline opportunities for public involvement, and answer questions about the proposal. Interested parties or citizens are welcome to join the meeting at any time since information will be provided throughout the duration of the open house. The Air Force will publish notices of EIS preparation and upcoming public scoping meetings in local newspapers.

5. Public and agency comments received during the meetings, as well as written comments received by the Air Force during the scoping period and throughout the environmental process, will be considered in the preparation of the EIS. To ensure the Air Force has sufficient time to consider public input in the preparation of the Draft EIS, we are requesting that comments be submitted by March 1, 2010 to HQ ACC/A7PS, 129 Andrews Street, Suite 337, Langley AFB VA 23665-2769, ATTN: Ms. Sheryl Parker, F-35A Ops EIS Project Manager.

6. If you or your staff has any specific questions or concerns about this proposal or desire additional information, we would like to hear from you. Our EIS project manager is Ms. Sheryl Parker, HQ ACC/A7PS and can be reached at the above address or at (757) 764-9334. Information is also available at www.airforcef-35opseis.com beginning January 19, 2010.

Sincerely



DIMASALANG F. JUNIO, Colonel, USAF
Chief, Programs Division

Attachment
Scoping Meeting Locations and Dates

Conditions required for NEPA & Section 106 of the NHPA have been met.
____V____ No Known Historic Resources
_____ No Resources Present
_____ No Adverse Effect
If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

2/8/2010 Linda Ray Wilson DSHPO
NH State Historic Preservation Officer

VERMONT

State of Vermont
Division for Historic Preservation
One National Life Drive, Floor 6
Montpelier, VT 05620-0501
www.HistoricVermont.org

[phone] 802-828-3211
[division fax] 802-828-3206

Agency of Commerce and Community Development

May 29, 2012

Mr. Nick Germanos
F-35A EIS Project Manager
HQ ACCA/A7PS
129 Andrews Street
Suite 102 (Room 337)
Hampton, VA 23665-2769

Re: F-35A Operational Wing Beddown Draft Environmental Impact Statement DOD

Dear Mr. Germanos:

Thank you for the opportunity to comment on the above-referenced project involving the Department of the Air Force (DHP #CH11-070). We received a copy of the Draft Environmental Impact Statement (EIS) on April 9, 2012, and are submitting these written comments for your consideration.

The Division for Historic Preservation is reviewing this proposed undertaking pursuant to 36 CFR 800.4, regulations established by the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act. Project review consists of identifying the project's potential impacts to historic buildings and structures, historic districts, historic landscapes and settings, and to known or potential archeological resources.

The Burlington Air Guard Station is located within a heavily populated area in the City of South Burlington. Based on the maps showing the proposed noise contour bands for both Scenarios 1 and 2, between 1,700 to 1,800 households surrounding the Air Guard Station will be within the 65 to 85 dB range of noise exposure. This area extends from South Burlington into the adjacent cities of Winooski, Burlington and Williston. All of these communities contain historic buildings and districts, many of which are listed on or eligible for listing on the National Register of Historic Places.

For several years now the Burlington International Airport (BTV) has participated in Federal Aviation Administration's (FAA) "Part 150, Airport Noise Compatibility Planning" program. This program sets forth standards for airports to document noise exposure and establish programs to minimize noise-related land use incompatibilities. In the residential neighborhoods surrounding BTV, noise impacts are being reduced by purchasing and demolishing houses within

the 65 dB noise contour. To date, approximately 144 homes in South Burlington have been purchased and demolished, and another 60 are targeted for removal. Because the majority of the houses in the targeted area are less than fifty years old, there have not been any issues with the demolition of historic structures.

The expanded noise contour map for the F-35s, however, may expose numerous historic structures and districts to noise levels above 65 dB. In order to fully evaluate the potential effects of the proposed project on historic resources, can you please provide answers to the following questions:

1. If the F-35s are based at the Burlington Air Guard Station, will the Department of the Air Force, the Vermont Air National Guard and/or the Burlington International Airport have access to and utilize the "Part 150, Airport Noise Compatibility Planning" program to purchase and demolish homes within the expanded 65 dB noise contour?

2. What level of effort and documentation will be undertaken by the Department of the Air Force, the Vermont Air National Guard and/or the Burlington International Airport to identify and evaluate historic buildings within the expanded 65 dB noise contour?

3. How will the Department of the Air Force, the Vermont Air National Guard and/or the Burlington International Airport ensure compliance with Section 106 of the National Historic Preservation Act if historic buildings within the expanded 65 dB noise contour are proposed for demolition as a noise reduction measure?

4. Can you provide a larger and more detailed map of the areas within the expanded 65 dB noise contour? A map with street names identified will help us better understand which neighborhoods and buildings are included with this area.

5. Will the F-35 flyovers, take-offs and landings produce increased vibrations that could adversely affect historic buildings, specifically masonry structures, within the expanded 65 dB noise contour? If so, can you provide data as to the level of potential vibrations and effects on historic resources, taking into account cumulative effects over several years of exposure?

6. The EIS states that: "There would be no adverse impacts to National Register-eligible archaeological, architectural, or traditional cultural properties." While this may be an accurate statement with regard to the actual placement of the new F-35s at the Burlington Air Guard Station, it does not address the potential for significant adverse effects on historic resources if houses within the expanded 65 dB will become candidates for purchase and demolition, or if vibrations have the potential to adversely affect historic structures over a long period of time. Will the final EIS take into account these potential effects?

We look forward to continuing our consultation with you on the proposed project. If you have any questions or need clarification regarding any of the above, please do not hesitate to contact Devin Colman, Historic Preservation Review Coordinator, at devin.colman@state.vt.us or 802-

828-3043. Mr. Colman reviewed this project and prepared this letter. I concur with the findings and conclusions described above.

Sincerely,
VERMONT DIVISION FOR HISTORIC PRESERVATION

Giovanna Peebles
State Historic Preservation Officer

HILL AFB

Table 2. Hill AFB State Historic Preservation Office Consultation Letters				
Addressee	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Utah State Historical Society 300 South Rio Grande Salt Lake City, UT 84101	Yes (9/20/2012)	Yes (9/24/2012)	Yes (9/24/2012)	Concurred, no adverse effect, 09/24/12. Consultation completed.
Nevada State Historic Preservation Office 100 North Stewart Street Carson City, NV 89701	Yes (March 2012)	Yes (9/13/2012)	Yes (9/20/12)	Concurred with findings in Draft EIS of no adverse effect. Response received by Hill AFB on 09/20/12. Consultation completed.

State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of Heritage and Arts

Julie Fisher
Executive Director

State History

Wilson G. Martin
Director

September 24, 2012

Robert T. Elliott, P.E., GS-14, DAF
Chief, Environmental Management Division
75 CEG/CEV
7274 Wardleigh Road
Hill Air Force Base Utah 84056-5137

RE: Potential Beddown of F-35A Aircraft, Hill Air Force Base, Utah

In reply please refer to Case No. 12-1556

Dear Mr. Elliott:

Thank you for the submission of information regarding the above-referenced project. The Utah State Historic Preservation Office received your submission and request for our comment on 8/14/2012, with additional information submitted on 9/20. Based on the information provided to our office, we concur with your finding of No Adverse Effect for the proposed undertaking.

This information is provided to assist with Section 106 responsibilities as per §36CFR800. If you have questions, please contact me at clhansen@utah.gov or 801-533-3561.

Regards,

Chris Hansen
Preservation Planner/Deputy SHPO

LEO M. DROZDOFF, P.E.
Director
Department of Conservation and Natural Resources

RONALD M. JAMES
State Historic Preservation Officer

BRIAN SANDOVAL
Governor

STATE OF NEVADA

Address Reply to:
901 S. Stewart Street, Suite 5004
Carson City, NV 89701-5248
Phone: (775) 684-3448
Fax: (775) 684-3442

www.nvshpo.org

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

September 13, 2012

Robert T. Elliott
Chief, Environmental Management Division
75CEG/CEV
7274 Wardleigh Road
Hill Air Force Base UT 84056-5137

RE: Beddown of F35A Aircraft at Hill Air Force Base, Elko and White Pine Counties (Undertaking #2012-2127).

Dear Mr. Elliott:

The Nevada State Historic Preservation Office (SHPO) reviewed the subject undertaking. The SHPO concurs with the U.S. Air Force's determination that the area of potential effect identified for the undertaking should be adequate to identify any historic properties that could be affected.

The SHPO concurs with the U.S. Air Force's determination that the identification efforts are adequate for the purposes of the undertaking.

The SHPO concurs with the U.S. Air Force's determination that the proposed undertaking will not pose an adverse effect to historic properties.

If you have any questions concerning this correspondence, please feel free to contact me at (775) 684-3443 or by e-mail at rlpalmer@shpo.nv.gov.

Sincerely,

Rebecca Lynn Palmer, Deputy
State Historic Preservation Officer

CEVP —
CE JACE —
orig: J. Hirsch

JACKSONVILLE AGS

Table 3. Jacksonville AGS State Historic Preservation Office Consultation Letters				
Addressee	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Florida Division of Historical Resources 500 South Bronough St., Room 305 Tallahassee, FL 32399	Yes (March 2012)	Yes (6/6/2012)	Yes (6/6/2012)	Concurred with Air Force conclusion of no adverse effects in letter dated 6/6/12. Consultation completed.

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Mr. Nick Germanos
F-35A EIS Project Manager
HQ ACC/A7PS
129 Andrews Street, Suite 102 (Rm 337)
Hampton, Virginia 23665-2769

June 6, 2012

RE: DHR Project File Number: 2012-2102-B
Requested Additional Information for the Draft Environmental Impact Statement for the F-35A Operational Wing Beddown - Jacksonville Air Guard Station at Jacksonville International Airport
Jacksonville, Duval County

Dear Mr. Germanos:

This office reviewed the requested information for the referenced project for possible impact to historic properties listed, or eligible for listing, on the *National Register of Historic Places.* The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, *36 CFR Part 800: Protection of Historic Properties* and the *National Environmental Policy Act of 1969,* as amended.

We note that a previous cultural resource survey (*Cultural Resources Survey and Evaluation Report of the Jacksonville Air National Guard Base)* was conducted in 2011 that included the project area.

Twenty-eight (28) buildings were evaluated and determined not to appear to meet the criteria for listing on the *National Register* and our office concurred. Therefore, no historic properties will be affected by this undertaking.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail *scott.edwards@dos.myflorida.com*, or at 850.245.6333 or 800.847.7278.

Sincerely,

Laura A. Kammerer

Laura A. Kammerer
Deputy State Historic Preservation Officer
For Review and Compliance

MOUNTAIN HOME AFB

Table 4. Mountain Home AFB State Historic Preservation Office Consultation Letters				
Addressee	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Idaho State Historical Society 2205 Old Penitentiary Road Boise, ID 83712	Yes (10/16/2012)	Yes (11/13/2012)	Yes (11/13/2012)	Letter requesting only negative response was received by SHPO on 10/16/12. On 11/13/12 the SHPO responded in a letter that the concurred with the Air Force determination of no effects. Consultation completed.
Nevada State Historic Preservation 100 North Stewart Street Carson City, NV 89701	Yes (10/16/12)	Yes (11/13/2012)	Yes (4/16/2013)	Letter requesting only negative response was received by the SHPO on 10/17/12. A follow-up phone call was made on 4/16/13 asking for comments or confirmation that the SHPO does not have any comments. They have not responded to the voice mail left on 4/16/13.
Oregon Parks and Recreation Dept. State Historic Preservation Office 725 Summer St. NE, Suite C Salem, OR 97301	Yes (10/16/2012)	Yes (4/16/2013)	Yes (7/19/2013)	Letter requesting only negative response was received by the SHPO on 10/17/12. A follow-up phone call was made on April 16, 2013 asking for comments or confirmation that the SHPO does not have any comments. Response to the Revised Draft EIS indicated the SHPO agreed with the Air Force determination of no adverse effects on 7/19/13. Consultation completed.

www.history.idaho.gov

Idaho • State Historical SOCIETY

C.L. "Butch" Otter
Governor of Idaho

Janet Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Membership and Fund Development
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 514-2310
Fax: (208) 334-2774

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

State Historic Preservation Office and Historic Sites
Archeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Statewide Sites:
• Franklin Historic Site
• Pierce Courthouse
• Rock Creek Station and
• Stricker Homesite

Old Penitentiary
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Idaho State Archives
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2620
Fax: (208) 334-2626

North Idaho Office
112 West 4th Street, Suite #7
Moscow, Idaho 83843
Office: (208) 882-1540
Fax: (208) 882-1763

November 13, 2012

Sheri Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB, Idaho 83648

RE: Section 106 Review of the F-35A Operational Beddown, Mountain Home Air Force Base, Idaho

Dear Sheri:

Thank you for requesting our views on the proposed beddown of the F-35 Joint Strick Fighter aircraft at Mountain Home Air Force Base, Idaho. It is our opinion that the beddown, as currently described, will have no effect on historic properties.

We appreciate your cooperation. If you have any questions, please feel free to contact me at 208-334-3847, ext. 107 or suzi.pengilly@ishs.idaho.gov.

Sincerely,

Susan Pengilly

Susan Pengilly
Deputy SHPO

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Idaho State Historical Society
2205 Old Penitentiary Road
Boise ID 83712

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 26 Jan 10. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Nevada State Historic Preservation
100 North Stewart Street
Carson City NV 89701

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 26 Jan 10. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Oregon Parks and Recreation Dept
State Historic Preservation Office
725 summer Street NE, Suite C
Salem OR 97301

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 26 Jan 10. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

SHAW AFB AND MCENTIRE JNGB

Table 5. Shaw AFB and McEntire JNGB State Historic Preservation Office Consultation Letters				
Addressee	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Historic Preservation Division/Georgia Department of Natural Resources 34 Peachtree Street NE Suite 1600 Atlanta, GA 30303	Yes (10/24/2012)	No	Yes (4/11/2013)	Letter from SHPO concurred with the Air Force determination of no adverse effects. Consultation completed.
State Historic Preservation Office 8301 Parkland Road Columbia, SC 29223	Yes (10/24/2012)	No	Yes (6/17/2013)	Official concurrence with determination of no adverse effects to the APE was received 6/17/13. Consultation completed.

DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

OCT 24 2012

FROM: 20 CES/CEAN (Attn: Mr. David Davis)
428 Chapin Street
Shaw AFB, SC 29152

TO: Historic Preservation Division/Georgia Department of Natural Resources
34 Peachtree Street NE Suite 1600
Atlanta, GA 30303

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 26 January 2010. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at (803)895-5325, david.davis@shaw.af.mil or the address above.

Sincerely,

DAVID Z. DAVIS, GS-11, DAFC
Cultural Resources Manager

Global Power For America

June 17, 2013

Nick Germanos
F-35A EIS Project Manager
HQ ACC/A7NS
129 Andrews Street, Suite 332
Langley Air Force Base, Virginia 23665

Re: F-35A Operational Wing Beddown Revised Draft EIS
Sumter County
SHPO Number: 10-CW0051

Dear Nick Germanos:

Thank you for your letter dated June 07, 2013 regarding the above-mentioned project. We have also received the revised draft Environmental Impact Statement as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to the Department of the Air Force pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

In a letter dated April 11, 2013, Rebekah Debrasko of our office sent a letter of "conditional concurrence" after a meeting with, and at the request of, David Z. Davis, Cultural Resources Manager at Shaw AFB. In that letter, our office stated our concurrence with Shaw's determination that the proposed F-35A Beddown will not affect any historic properties. Our statement of "conditional concurrence" was issued dependant on the clarification of the following points: the definition of the Area of Potential Effect (APE), identification of historic properties within the APE, and determination of effect for the proposed undertaking.

Based on the description of the APE and the identification of historic properties within the APE, our office concurs with our previous assessment that no properties listed on or eligible for listing on the National Register of Historic Places will be affected by this project

If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, human skeletal remains, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately.

If you have any questions, please contact me at (803) 896-6181 or edale@scdah.state.sc.us.

Sincerely,

Emily Dale
Archaeologist/GIS Coordinator
State Historic Preservation Office

April 11, 2013

Mr. David Davis
Cultural Resources Manager
20 CEW/CEAN
428 Chapin St.
Shaw AFB, SC 29152

Re: F-35A Operational Beddown
Shaw Air Force Base
Sumter County, South Carolina
SHPO Project No. 10-CW0051

Dear Mr. Davis:

Thanks to you and your colleagues for meeting with me on April 9 regarding the above-referenced project. We also received a CD copy of the draft Environmental Impact Statement as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to the Department of the Air Force pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

We understand that the proposed F-35A planes will utilize the existing air space and flight patterns that Shaw Air Force Base currently uses. We also understand that the number of sorties will be less than currently occur. Any proposed new construction to support the F-35A planes will occur on the northern end of the air strip at the base and will not affect any known historic properties at the base. We concur with Shaw's determination that the proposed F-35A Beddown will not affect any historic properties.

If you have any questions, please contact me at (803) 896-6183 or dobrasko@scdah.state.sc.us.

Sincerely,

Rebekah Dobrasko

Rebekah Dobrasko
Supervisor of Compliance, Tax Incentives, and Survey
State Historic Preservation Office

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

MEMORANDUM

TO: Samuel Johnson
428 Chapin Street
Shaw AFB, South Carolina 29152

FROM: Elizabeth Shirk ECS
Environmental Review Coordinator
Historic Preservation Division

RE: Finding of "No Historic Properties Affected"

PROJECT: **F-35A Operational Beddown**
Federal Agency: Air Force
HP-100201-002

COUNTY: Statewide

DATE: April 19, 2013

The Historic Preservation Division (HPD) has reviewed the information received concerning the above-referenced project. Our comments are offered to assist federal agencies in complying with the provisions of Section 106 of the National Historic Preservation Act, as amended.

Based on the information submitted, HPD has determined that no historic properties or archaeological resources located in Georgia that are listed in or eligible for listing in the National Register of Historic Places will be affected by this undertaking. Please note that historic and/or archaeological resources may be located within the project's area of potential effect (APE). However, at this time it has been determined that they will not be impacted by the above-referenced project. Furthermore, any changes to this project as proposed will require further review by our office for compliance with Section 106.

If we may be of further assistance, please do not hesitate to contact me at (404) 651-6624. Please refer to the project number assigned above in any future correspondence regarding this project.

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GEORGIASHPO.ORG

GOVERNMENT-TO-GOVERNMENT CONSULTATION

GOVERNMENT-TO-GOVERNMENT

In accordance with Section 106 of the National Historic Preservation Act (United States Code of Federal Regulation 800.3), the Native American Graves Protection and Repatriation Act, and Executive Order #13007, federally-recognized Native American Tribes were sent letters initiating consultation letters in November and December 2010 (see Appendix B of the Draft EIS). The Tribes were identified as having potential interest in actions associated with the bases or in areas of potential effect underlying the airspace proposed for F-35A operations. Any responses were included in Appendix A of the Draft EIS.

The Air Force made diligent efforts to contact the Tribes throughout the NEPA process. However, in many cases they or their representative Tribal Historic Preservation Office (THPO) did not respond. The Air Force sent an initial consultation letter in 2010, followed by the March 2012 Draft EIS and associated request for concurrence with the determinations presented therein. In the summer and fall of 2012 follow-on consultation letters requesting concurrence with the Draft EIS determinations were again sent to Tribes and THPOs and in the summer of 2013, the Revised Draft EIS was published and once again was sent to the Tribes and THPOs requesting input. In addition to these efforts, numerous phone calls were made from the fall 2012 through summer 2013 to solicit feedback from the Tribes and/or THPOs and met with limited success. Therefore, in accordance with 36 CFR 800.4(d)(1) *No historic properties affected*. "If the agency official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in § 800.16(i), the agency official shall provide documentation of this finding, as set forth in § 800.11(d), to the SHPO/THPO. The agency official shall notify all consulting parties, including Indian tribes and Native Hawaiian organizations, and make the documentation available for public inspection prior to approving the undertaking. (i) If the SHPO/THPO, or the Council if it has entered the section 106 process, does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under section 106 are fulfilled." The Air Force has undertaken the steps outlined above, specific to 36 CFR 800.11(d) and (i).

Tables 6 through 10 outline the status of consultation by basing location.

BURLINGTON AGS

Table 6. Burlington AGS Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
St. Regis Mohawk Tribe Tribal Historic Preservation Officer 412 State Route 37 Akwesasne, NY	Yes (1/19/2010)	Yes (12/15/2010)	Yes (12/15/2010)	Consultation Completed
St. Regis Band of Mohawk Indians Chief 412 State Route 37 Akwesasne, NY	Yes (1/19/2010)	Yes (12/15/2010)	Yes (12/15/2010)	Consultation Completed
Seneca Nation Tribal Historic Preservation Officer 90 Oni:yo' Way Salamanca, NY	Yes (1/19/2010)	Yes (1/14/2011)	Yes (1/22/2013)	Consultation Completed
Seneca Nation President P.O. Box 231 Salamanca, NY	Yes (1/19/2010)	Yes (1/14/2011)	Yes (1/22/2013)	Consultation Completed
Oneida Indian Nation Tribal Historic Preservation Officer 2037 Dream Catcher Plaza Oneida, NY	Yes (1/19/2010)	Yes (12/29/2010)	Yes (12/29/2010)	Consultation Completed
Oneida Indian Nation Representative 2037 Dream Catcher Plaza Oneida, NY	Yes (1/19/2010)	Yes (12/29/2010)	Yes (12/29/2010)	Consultation Completed

Table 6. Burlington AGS Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Stockbridge-Munsee Tribal Historic Preservation Officer P.O. Box 70W13447 Camp 14 Road Bowler, WI	Yes (1/19/2010)	Yes (12/15/2010)	Yes (12/15/2010)	Consultation Completed
Passamaquoddy Tribe - Pleasant Point Reservations Tribal Governor/Chief P.O. Box 343 Perry, ME	Yes (1/19/2010) (8/17/2012)	No	No (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, base Environmental Manager (EM) called and spoke to Chief's administrative assistant and discussed project, mentioned 8/17/2012 letter, and requested comment or notice that the tribe will not be commenting. Administrative assistant indicated that they would discuss with the Chief and send comments, if they have any. On 7/3/2013, base EM left voicemail message for Chief Cleaves. No further response received.
Passamaquoddy Tribe - Indian Township Reservations Chief P.O. Box 301 Princeton, ME	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, base EM called and spoke to Chief's administrative assistant. The administrative assistant passed EM on to Chief's voicemail; a message was left with the Chief describing the project and noting the 8/17/2012 letter that was sent requesting any comments or notices that the tribe will not be commenting. On 7/3/2013, base EM left a voicemail message for Tribal representative Jennifer Socobasin. No further response received.
Penobscot Indian Nation Chairman 12 Wabanaki Way Indian Island, ME	Yes (1/19/2010) (8/17/2012)	Yes (1/20/2011)	No response (4/16/2013 call and 5/2013 email)	They indicated in January 2011 that they wanted to stay involved in the EIS process. The Tribe was sent the Draft EIS in March 2012, no response was received. In May 2013, an email informed the Nation that the Air Force would be sending an updated document this summer. No further response received.

Table 6. Burlington AGS Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Penobscot Indian Nation Tribal Historic Preservation Officer 12 Wabanaki Way Indian Island, ME	Yes (1/19/2010) (8/17/2012)	Yes (1/20/2011)	No response (4/16/2013 call and 5/2013 email)	They indicated January 2011 that they wanted to stay involved in the EIS process. The Tribe was sent the Draft EIS in March 2012, no response was received. In May 2013, an email informed the Nation that the Air Force was sending a Revised Draft EIS in May 2013. No further response received.
Aroostook Band of Micmacs Tribal Chief 7 Northern Road Presque Isle, ME	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, base EM called and spoke to Chief Getchell. They discussed the project and the 8/17/2012 letter; the base EM requested comment or notice that the Tribe will not be commenting. Chief requested email with copy of original letter, which was sent on 4/16/2013. Chief will review and may send comments either to ACC or Base EM. On 7/3/2013, base EM called Tribal Chief's office. Administrative person said Mr. Getchell was no longer the Chief, and new Chief is Edward Peter-Paul. Chief Peter-Paul was not available, but his email address was provided and the original information sent on 7/3/2013. No further response received.
Houlton Band of Maliseet Indians Tribal Chief 88 Bell Road Littleton, ME	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, base EM called and spoke to Chief's administrative assistant, discussed project, mentioned 8/17/2012 letter, and requested comment or notice that the tribe will not be commenting. They indicated that they will discuss with the Chief and send comments if they have any. On 7/3/2013, base EM called and spoke to Tribal member who said they would pass a message on to Chief Brenda Commander. No further response received.

Table 6. Burlington AGS Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Cayuga Nation of New York Federal Representative and Chief P.O. Box 803 Seneca Falls, NY	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, base EM called and spoke to a second Chief on the Council of Chiefs, Mr. Tim Twoguns. Base EM discussed the project and the 8/17/2012 letter and requested comment or notice that the tribe will not be commenting. Chief requested email with copy of original letter, which was sent on 4/16/2013. Chief will review and may send comments either to ACC or Base EM. Email sent to Chief Twoguns on 7/3/2013. No further response received.
Onondaga Nation Council Representative 102 West Conklin Avenue Nedrow, NY	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, Base EM called and spoke to Council's administrative assistant, discussed project, mentioned 8/17/2012 letter and requested comment or notice that the tribe will not be commenting. Administrative assistant said to send an email to the attention of Jeanie Shenandoah, a council point of contact. Email sent to Council point of contact (onon.comm@gmail.com) on 7/3/2013. No further response received.
Tonawanda Band of Senecas Chief 7027 Meadville Road Basom, NY	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	On 4/16/2013, base EM called and spoke to Chief's administrative assistant, discussed project, mentioned 8/17/2012 letter and requested comment or notice that the tribe will not be commenting. Administrative assistant indicated they will discuss with the Chief and send comments if they have any. On 7/3/2013, base EM called Administration Office and spoke to administrative person. That person indicated they would leave message with the Chief. No further response received.

Table 6. Burlington AGS Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Tuscarora Nation Chief 5616 Walmore Road Lewiston, NY	Yes (1/19/2010) (8/17/2012)	No	No response (4/16/2013 call and 7/3/2013 email)	Email sent on 4/16/2013 to address in BIA listing requesting comment. A second email sent to address in BIA listing on 7/3/2013. No further response received.

From: Jesse Bergevin
To: Leary, Susan C.
Subject: FW: EIS for beddown of F-35A Joint Strike Fighter aricraft
Date: Thursday, February 03, 2011 10:33:45 AM

Copy of reply.

Thank you,

Jesse Bergevin
Historic Resources Specialist
Telephone: (315) 829-8463
Facsimile: (315) 829-8473
E-mail: jbergevin@oneida-nation.org

From: Wright, Adam G Civ USAF ANG 158 MDG/SG [mailto:adam.wright@ang.af.mil]
Sent: Wednesday, December 29, 2010 12:47 PM
To: Jesse Bergevin
Cc: Fick, Douglas E Col USAF ANG 158 FW/FW; Clark, Joel A Col USAF ANG 158 FW/FW; Marek, Kevin P CIV USAF ANG NGB/A7AM; Parker, Sheryl K Civ USAF ACC ACC/A7PS; Rudolph, Teresa P; Caputo, Christopher P LtCol USAF ANG 158 OSF/CC
Subject: RE: EIS for beddown of F-35A Joint Strike Fighter aricraft

Thank you for providing input. I am forwarding this to our Commanders, the Air Force project manager and cultural resource specialist on the EIS team. We will notify you as requested in the event of the discovery of human remains or if Native historic materials are identified in later stages of this project.

Please contact me if you have any questions or concerns moving forward.

Adam

Adam Wright, Civilian
Environmental Manager
158FW/EM
Vermont Air National Guard
(802) 660-5966
DSN 220-5966

From: Jesse Bergevin [mailto:jbergevin@oneida-nation.org]
Sent: Wednesday, December 29, 2010 11:08 AM
To: Wright, Adam G Civ USAF ANG 158 MDG/SG
Subject: EIS for beddown of F-35A Joint Strike Fighter aricraft

Thank you for providing notice to the Oneida Indian Nation of the United States Air Force's

preparation of an Environmental Impact Statement for the beddown of F-35A Joint Strike Fighter aircraft at one or more installations within the continental United States. As this undertaking appears to replace the existing F-16 aircraft and will require no ground disturbing activities then I think this undertaken would have no impact on buried cultural resources.

In addition, although there are traditional cultural properties of significance to the Oneida Indian Nation within the Fort Drum Military reservation, I would estimate that this undertaking would not change the use of the air space there. However, if you would like to further discuss this issue I can be contacted by email or at the telephone number below.

The Oneida Indian Nation requests notification in the event of the inadvertent discovery of human remains or if Native historic materials are identified in the later stages of this project.

Thank you,

Jesse Bergevin
Historic Resources Specialist
Telephone: (315) 829-8463
Facsimile: (315) 829-8473
E-mail: jbergevin@oneida-nation.org

From: Wright, Adam G Civ USAF ANG 158 MDG/SG <adam.wright@ang.af.mil>
Sent: Thursday, January 20, 2011 10:13 AM
To: Bonnie Newsom
Cc: Kirk Francis; John Banks; Fick, Douglas E Col USAF ANG 158 FW/FW; Clark, Joel A Col USAF ANG 158 FW/FW; Marek, Kevin P CIV USAF ANG NGB/A7AM; Rudolph, Teresa P; Caputo, Christopher P LtCol USAF ANG 158 OSF/CC; Key, James E LtCol USAF ACC AFLOA/JACE-FSC; Harris, Richard N BrigGen USAF ANG VERMONT ANG HQ/CS; Bartz, Kate L.
Subject: RE: Beddown of F-35A Joint Strike Fighter Aircraft

Hi Ms. Newsom,

Thank you for participating in the EIS process for the F-35 Beddown. I am forwarding your email to our Base Commander, Col Fick, and the EIS Team that is working on the airspace and cultural resource aspects. We will be sure to include you on the distribution of the draft EIS. Please call or write if you have any questions, concerns or comments moving forward.

Adam

Adam Wright, Civilian
Environmental Manager
158FW/EM
Vermont Air National Guard
(802) 660-5966
DSN 220-5966

-----Original Message-----
From: Bonnie Newsom [mailto:Bonnie.Newsom@penobscotnation.org]
Sent: Thursday, January 20, 2011 11:31 AM
To: Wright, Adam G Civ USAF ANG 158 MDG/SG
Cc: Kirk Francis; John Banks
Subject: Beddown of F-35A Joint Strike Fighter Aircraft

Dear Mr. Wright,

Thank you for returning my call today. Please accept this e-mail as notification that the Penobscot Nation has an interest in the above-referenced project. Please include us in distributions of the EIS and other pertinent information.

Sincerely,

Bonnie Newsom
Tribal Historic Preservation Officer
Penobscot Indian Nation
12 Wabanaki Way
Indian Island, Maine 04468

207-817-7332

-----Original Message-----
From: Wright, Adam G Civ USAF ANG 158 MDG/SG
Sent: Tuesday, January 22, 2013 10:06 AM
To: Cummings, Christina G (Christina.Cummings@cardnotec.com); Germanos, Nicholas M Civ USAF HQ ACC/A7PS
Cc: Marek, Kevin P CIV USAF ANG NGB/A7AM; Ahmann, Michael L LtCol USAF ANG 158FW/IG; Clark, Joel A Col MIL US USAF
Subject: FW: F-35 Operational Basing - Seneca response

Christina and Nick,

I just received this response from the Seneca Nation of Indians. No comments nor the need for a Final copy of the EIS. I thanked Mr. Myers for his response.

Adam

Adam Wright
158FW Environmental Manager
Vermont Air National Guard
30 Falcon Street
South Burlington, VT 05403
(802) 660-5966
DSN 220-5966

From: Andrew Myers [mailto:Andrew.Myers@sni.org]
Sent: Tuesday, January 22, 2013 9:35 AM
To: Wright, Adam G Civ USAF ANG 158 MDG/SG
Subject: Re: F-35 Operational Basing

Greetings Adam,

We have no comments regarding the above mentioned project. We also do not require a CD of the final F-35 Operational Basing EIS.

Sincerely,

Andrew J. Myers, Tribal Archaeologist
Seneca Nation of Indians

_____

RESPONSE FORM
U.S. AIR FORCE OPERATIONAL BASING OF THE F-35A AIRCRAFT EIS

✓ I/We do not have concerns.

_____ I/We have concerns and would like to be contacted. You may contact me at the following: _____

_____

_____ I/We have concerns. They are outlined below:

_____
_____
_____
_____
_____
_____
_____
_____

_____ I/We would like to be included in the distribution of the Environmental Impact Statement related to this project.

_____ I/We would like to be included in a face-to-face meeting, and are available during the following time periods: _____

_____

CONTACT LETTER MAILED TO:

NAME AND ADDRESS (if different):

Lana Watt, THPO
90 Onondowa'ga' Way
Salamanca, NY 14779

Lana Watt 1-14-11

Signature Date Signature Date

Please Return Completed form to:

PHONE:
FAX:

To: Wright, Adam G Civ USAF ANG 158 MDG/SG
Subject: Burlington Air Guard Station Renovations

She:kon Adam,

The St.Regis Mohawk Tribe has no further questions or comments regarding the proposed renovation project on the Burlington Air Guard Station. Should you have any further questions for this office please contact me at 1(518)358-2272 ext 164.

Nia:wen,

Arnold L Printup
THPO
St.Regis Mohawk Tribe

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White – Tribal Historic Preservation Officer
W13447 Camp 14 Road
P.O. Box 70
Bowler, WI 54416

TCNS# _____ Date: 12-15-10

PROJECT # Bedtown of F-35A Joint Strike Fighter

COMPANY NAME Department of Air Force

ADDITIONAL INFORMATION NEEDED

_____ Site visit by Tribal Historic Preservation Officer

_____ Archeological survey, phase 1

_____ Literature/record search including colored maps

_____ Pictures of site

__/__ SHPO report

_____ Project does not appear to endanger archaeological sites of interest to the Stockbridge-Munsee Tribe.

_____ Out of area

_____ Has site been previously disturbed? _____ Yes _____ No

If yes, to what extent and when?

Will the proposed action adversely affect properties listed, or eligible for listing on the National Register of Historic Places? (buildings, archaeological sites; objects of significance to a Tribe including graves, funerary objects, and traditional cultural properties) _____ Yes _____ No

Should this project inadvertently uncover a Native American site, even after an archaeological survey or if there is a change to the project, we ask that you halt all construction and notify the Stockbridge-Munsee Tribe immediately.

Sincerely,

Sherry White

Sherry White
Tribal Historic Preservation Officer

(715)793-3970

Email: sherry.white@mohican-nsn.gov

HILL AFB

Table 7. Hill AFB Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Skull Valley Band of Goshute Indians P.O. Box 448 Grantsville, UT 84029	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Shoshone-Bannock Tribes P.O. Box 306 Fort Hall, ID 83203	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Confederated Tribes of the Goshute Indian Reservation P.O. Box 6104 Ibapah, UT 84032	Yes (1/19/2010) (8/9/2012)	Yes	Yes (10/ 2012)	Letter requesting concurrence of no effect sent and meeting with Tribes undertaken in on 10/5/2012. Meeting minutes of consultation indicated on 10/30/2012 that the Confederated Tribes concurred with Air Force conclusion of no effect.
Northwestern Band of Shoshone Nation Brigham City Tribal Office 707 N. Main Street Brigham City, UT 84302	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Te-Moak Tribe of the Western Shoshone 525 Sunset Street Elko, NV 89801	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Wells Band Council P.O. Box 809 Wells, NV 89835	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.

Table 7. Hill AFB Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Eastern Shoshone Tribe P.O. Box 538 Fort Washakie, WY 82514	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Northern Arapaho Tribe P.O. Box 396 Fort Washakie, WY 82514	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Ute Mountain Indian Tribe P.O. Box 248 Towaoc, CO 81334	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
San Juan Southern Paiute Tribe P.O. Box 1989 Tuba City, AZ 86045	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Pueblo of Zuni P.O. Box 339 Zuni, NM 87327	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Navajo Nation P.O. Box 9000 Window Rock, AZ 86515	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Hopi Tribe P.O. Box 123 Kykotsmovi, AZ 86039	Yes (1/19/2010) (8/9/2012)	Yes	Yes (8/23/2012)	Letter requesting concurrence of no effect was sent in August 9, 2012 with confirmation of receipt. Received response with concurrence on August 23, 2012. Consultation completed.

Table 7. Hill AFB Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Paiute Indian Tribe of Utah 440 North Paiute Drive Cedar City, UT 84720	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Crow Tribe of Montana P.O. Box 159 Crow Agency, MT 59022	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Ute Indian Tribe, Uintah and Ouray Reservation P.O. Box 190 Fort Duchesne, UT 84026	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Blackfeet Tribe P.O. Box 850 Browning, MT 59417	Yes (1/19/2010) (8/9/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in August 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.

2012-2127 ~~2294~~

9/14

9/8

DEPARTMENT OF THE AIR FORCE
75TH CIVIL ENGINEER GROUP (AFMC)
HILL AIR FORCE BASE UTAH

#8787

9 August 2012

Mr. Robert T. Elliott
Chief, Environmental Management Division
75 CEG/CEV
7274 Wardleigh Road
Hill Air Force Base Utah 84056-5137

RECEIVED
AUG 16 2012
STATE HISTORIC
PRESERVATION OFFICE

Mr. Chris Hansen
Ms. Lori Hunsaker
State Historic Preservation Office
300 Rio Grande
Salt Lake City Utah 84101

Ms Rebecca L. Palmer
Deputy Historic Preservation Officer
100 North Stewart Street
Carson City, Nevada 89701

Dear Mr. Hansen, Ms. Hunsaker, and Ms. Palmer

The United States Air Force (USAF) is currently proposing to beddown new F-35A aircraft at one or more locations throughout the contiguous US from 2015-2020. Hill Air Force Base (AFB) has been identified as a preferred alternative for this initial beddown. Three beddown scenarios of 24, 48, or 72 F-35As are proposed; these aircraft would replace up to 48 F-16s currently operating on Hill AFB. Hill AFB has determined the F-35A beddown constitutes an undertaking as defined in 36 CFR §800.16(y).

The Area of Potential Effect (APE) is defined as the boundaries of Hill AFB, located in Davis and Weber Counties, Utah (Hill AFB APE: 6611 acres) and the associated airspace overlying Beaver, Box Elder, Juab, Millard, and Tooele Counties in Utah and Elko and White Pine Counties in Nevada (Airspace APE: 10,760,000 acres). Various state and federal agencies manage property underneath the Airspace APE. After consultation, Hill AFB has been designated the lead federal agency as specified in 36 CFR §800.2(a)(2).

Based on the scope of the undertaking, pedestrian inventory was not completed for the entire APE. Portions of the APE were previously inventoried for various undertakings unrelated to the current proposal. Within the Hill AFB APE, a total of 127 buildings and structures have been determined eligible for listing on the National Register of Historic Places (NRHP) as individually eligible or as contributing elements to an historic district. One historic refuse dump

(42Dv51) and two prehistoric isolates, all determined ineligible for listing on the NRHP, have also been located.

At least 980 NRHP-eligible prehistoric and historic archaeological sites and 378 historic buildings and structures are located under the Airspace APE in Utah, along with approximately 1400 unevaluated sites. It is presumed that a proportionate number of sites are located under the Airspace APE in Nevada. In addition, eight structures located beneath the Airspace APE are listed on the NRHP: American Legion Hall in McGill, Nevada; Bonneville Salt Flats Race Track in Wendover, Utah; Central Pacific Railroad Grade Historic District near Umbria Junction, Utah; Desert Experimental Range Station Historic District in Milford, Utah; Iosepa Settlement Cemetery in Iosepa, Utah; Lincoln Highway Bridge within the Dugway Proving Ground, Utah; A.N. Tanner House in Grouse Creek, Utah; and Topaz War Relocation Center Site in Delta, Utah.

Under each beddown scenario, a number of buildings within the Hill AFB APE would be altered, renovated, or demolished. All but one of the buildings (building 5) proposed for modifications are not yet historic, have been determined ineligible for listing on the NRHP, or adverse effects have been previously mitigated through a 2005 Memorandum of Agreement with the Utah State Historic Preservation Office not related to the current undertaking. Building 5 has been determined eligible for listing on the NRHP for its role during World War II. The proposed modifications to building 5 are interior and therefore would not impact the historic character of the building.

There would be no modifications to the Airspace APE; the utilized airspace would be the same as previously established for current operations and activities already in practice (aircraft over flights, use of chaff and flares, supersonic flight). The relatively high altitude of the aircraft (eighty percent of proposed training activities would occur above 23,000 feet mean sea level) would result in negligible change to the visual setting. Chaff and flare detritus would be unobtrusive given the very large size of the Airspace APE. There would be an imperceptible change in subsonic noise due to the undertaking. Finally, the low frequency of sonic booms and the low peak overpressures of those sonic booms would not result in an impact to historic structures below the Airspace APE.

A copy of the report, *Final Cultural Resources Report and Section 106 Documentation for the Proposed F35A Beddown and Combat Training Procedures, Hill Air Force Base and Associated Airspace, Utah and Nevada*, has been prepared for review (Attachment). A draft of the report was sent to the various state and federal agencies who manage property underneath the Airspace APE for review and comment. In addition, as part of government-to-government consultation specific to the F-35A beddown, the USAF contacted 20 American Indian Tribes regarding the proposed F-35A beddown proposal. Tribes consulted include those who live in the vicinity of the project area and those who have ancestral ties to the land. A copy of the report is being sent for their review and comment as specified in 36 CFR §800.2(c).

Based on the attached report, Hill AFB has determined the proposed F-35A beddown will have no adverse effect to historic properties [36 CFR §800.5(b)]. I request your concurrence with this determination.

Should you or your staff have any questions, please contact our archaeologist, Ms. Jaynie Hirschi, 75 CEG/CEVP, at (801) 775-6920 or at jaynie.hirschi@hill.af.mil.

Sincerely

ROBERT T. ELLIOTT, P.E., GS-14, DAF
Chief, Environmental Management Division
75th Civil Engineer Group

Attachment:
1. *Final Cultural Resources Report and Section 106 Documentation for the Proposed F35A Beddown and Combat Training Procedures, Hill Air Force Base and Associated Airspace, Utah and Nevada*

cc:
Blackfeet Indian Tribe
Confederated Tribes of the Goshute Indian Reservation
Crow Tribe of Montana
Duckwater Shoshone Tribe
Eastern Shoshone Tribe
Ely Shoshone Tribe
Hopi Tribe
Navajo Nation
Northern Arapaho Tribe
Northwestern Band of the Shoshone Nation
Paiute Indian Tribe of Utah
Pueblo of Zuni
San Juan Southern Paiute Tribe
Shoshone-Bannock Tribes of the Fort Hall Reservation
Shoshone-Paiute Tribes of the Duck Valley Reservation
Skull Valley Band of Goshute Indians
Te-Moak Tribe of Western Shoshone Indians
Ute Indian Tribe
Ute Mountain Ute Tribe
Wells Band of Western Shoshone
Ms. Lisa Beck, Archaeologist, Utah School and Institutional Trust Lands Administration
Mr. Tom Flanigan, Archaeologist, United States Forest Service Uinta-Wasatch-Cache National Forest
Ms. Lisa Gilbert, Archaeologist, Bureau of Land Management Ely District Office
Mr. Monson Shaver, Archaeologist, Utah Division of Wildlife Resources
Mr. Mike Sheehan, Archaeologist, Bureau of Land Management Salt Lake Field Office
Mr. Eric Stever, United States Forest Service Humboldt-Toiyabe National Forest
Mr. Russell Tanner, Archaeologist, Bureau of Land Management Fillmore Field Office
Mr. Nate Thomas, Bureau of Land Management Cedar City Field Office
Mr. Matthew Werle, Archaeologist Bureau of Land Management Elko District Office

Rose, Kathy L

Subject: FW: Comments on Hill AFB - F-35As

From: Goshute Tribe [mailto:ednaranjo@goshutetribe.com]
Sent: Monday, May 14, 2012 12:31 PM
To: Hirschi, Jaynie Civ USAF AFMC 75 CEG/CEVP
Subject: Comments on Hill AFB - F-35As

Jaynie.....I was unable to make the scoping meeting held in Wendover. Not sure if the below concerns should be addressed to you or someone else.
Would you please pass the concerns onto whomever comments are to be directed. These are concerns raised by our legal counsel. Thanks

1. First of all, this consultation was insufficient. Hill AFB combined the CTGR consultation with local cities, counties and other parties. This is unacceptable because the federal government has a government to government relationship with Indian tribes and CTGR, as a result, should have its own consultation. This nation to nation relationship is greater than the relationship that the feds have with cities, counties and other parties.
2. Secondly, CTGR should use this consultation to push forward the issue of low flying passes of military aircraft over the reservation. These low flying passes are extremely dangerous to both the Indian and non-Indian residents of the Ibapah valley. Both of these issues should be consulted on together. There have been crashes that have taken over 20 years to clean up and both of these issues have an admittedly negative impact upon the reservation.
3. ACTION BASED UPON COUNCIL AUTHORIZATION: The President of the United States REQUIRED, via an Executive Order in 2009, for all departments to develop and implement new consultation policies that govern actions that affect Indian tribes. I recommend that we use the Air Force consultation policy to demand immediate consultation on these two issues. The Air Force leadership needs to have meaningful consultation with CTGR as it has a trust responsibility for the health and safety of all the residents of the reservation.

Should you or your staff have any questions, please contact our archaeologist, Ms. Jaynie Hirschi, 75 CEG/CEVP, at (801) 775-6920 or at jaynie.hirschi@hill.af.mil.

Sincerely

ROBERT T. ELLIOTT, P.E., GS-14, DAF
Chief, Environmental Management Division
75th Civil Engineer Group

Attachment:
1. *Final Cultural Resources Report and Section 106 Documentation for the Proposed F35A Beddown and Combat Training Procedures, Hill Air Force Base and Associated Airspace, Utah and Nevada*

cc:
Blackfeet Indian Tribe
Confederated Tribes of the Goshute Indian Reservation
Crow Tribe of Montana
Duckwater Shoshone Tribe
Eastern Shoshone Tribe
Ely Shoshone Tribe
Hopi Tribe
Navajo Nation
Northern Arapaho Tribe
Northwestern Band of the Shoshone Nation
Paiute Indian Tribe of Utah
Pueblo of Zuni
San Juan Southern Paiute Tribe
Shoshone-Bannock Tribes of the Fort Hall Reservation
Shoshone-Paiute Tribes of the Duck Valley Reservation
Skull Valley Band of Goshute Indians
Te-Moak Tribe of Western Shoshone Indians
Ute Indian Tribe
Ute Mountain Ute Tribe
Wells Band of Western Shoshone
Ms. Lisa Beck, Archaeologist, Utah School and Institutional Trust Lands Administration
Mr. Tom Flanigan, Archaeologist, United States Forest Service Uinta-Wasatch-Cache National Forest
Ms. Lisa Gilbert, Archaeologist, Bureau of Land Management Ely District Office
Mr. Monson Shaver, Archaeologist, Utah Division of Wildlife Resources
Mr. Mike Sheehan, Archaeologist, Bureau of Land Management Salt Lake Field Office
Mr. Eric Stever, United States Forest Service Humboldt-Toiyabe National Forest
Mr. Russell Tanner, Archaeologist, Bureau of Land Management Fillmore Field Office
Mr. Nate Thomas, Bureau of Land Management Cedar City Field Office
Mr. Matthew Werle, Archaeologist Bureau of Land Management Elko District Office

JACKSONVILLE AGS

Table 8. Jacksonville AGS Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Tribe Historic Preservation Office The Seminole Tribe of Florida 34725 W. Boundary Road Clewiston, FL 33440	Yes (1/19/2010) (10/31/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Section 106 and NAGPRA Representative Miccosukee Tribe of Indians Tamiami Station, PO Box 440021 Miami, FL 33144	Yes (1/19/2010) (10/31/2012)	No	Yes (11/20/2012)	Mr. Bayhawk left a voicemail message and said that they only answer letters if there is an issue and do not send any written responses unless they choose to because of the high amount of inquiries they receive from all federal agencies.
Manager, Cultural Preservation Muscogee (Creek) Nation P.O. Box 580 Okmulgee, OK 74447	Yes (1/19/2010) (10/31/2012)	No	No response to letter	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012. However, no response was received.
Tribe Historic Preservation Office Poarch Band of Creek Indians 5811 Jack Springs Road Atmore, AL 36502	Yes (1/19/2010) (10/31/2012)	No	No Response to letter	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012. However, no response was received.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 125TH FIGHTER WING (ACC)
14300 FANG DRIVE
JACKSONVILLE, FLORIDA 32218-7933

October 31, 2012

Mr. Colley Billie, Chairman
Mr. Steve Terry, Section 106 and NAGPRA, Representative
Miccosukee Tribe of Indians
Tamiami Station, P.O. Box 440021
Miami, FL 33144

125 FW/EMO
14300 FANG Drive
Jacksonville, FL 32218-7933

RE: F-35 Operational Beddown, Environmental Impact Statement (EIS)

Dear Mr. Billie,

The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. A basing alternative is being considered at Jacksonville Air Guard Station, Jacksonville Florida. The draft EIS is available for your review and download at this web site: www.accplanning.org

The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on December 17, 2010. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 15 November, 2012. Negative responses are required.

Should there be any questions; feel free to contact me at (904) 741-7410 or by email: pedro.santiago.1@ang.af.mil.

Sincerely

PEDRO J. SANTIAGO, Lt Col, FLANG
Environmental Program Manager

cc:
File
NGB/A7AN
HQ ACC/A7PS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 125TH FIGHTER WING (ACC)
14300 FANG DRIVE
JACKSONVILLE, FLORIDA 32218-7933

October 31, 2012

Mr. Willard S. Steele, THPO
The Seminole Tribe of Florida
34725 W. Boundary Road
Clewiston, FL 33440

125 FW/EMO
14300 FANG Drive
Jacksonville, FL 32218-7933

RE: F-35 Operational Beddown, Environmental Impact Statement (EIS)

Dear Mr. Cypress,

The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. A basing alternative is being considered at Jacksonville Air Guard Station, Jacksonville Florida. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Sincerely

PEDRO J. SANTIAGO, Lt Col, FLANG
Environmental Program Manager

cc:
File
NGB/A7AN
HQ ACC/A7PS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 125TH FIGHTER WING (ACC)
14300 FANG DRIVE
JACKSONVILLE, FLORIDA 32218-7933

October 31, 2012

Mrs. Joyce A. Bear
Muscogee (Creek) Nation
Manager, Cultural Preservation
P.O. Box 580
Okmulgee, OK 74447

125 FW/EMO
14300 FANG Drive
Jacksonville, FL 32218-7933

RE: F-35 Operational Beddown, Environmental Impact Statement (EIS)

Dear Mrs. Bear,

The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. A basing alternative is being considered at Jacksonville Air Guard Station, Jacksonville Florida. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Sincerely

PEDRO J. SANTIAGO, Lt Col, FLANG
Environmental Program Manager

cc:
File
NGB/A7AN
HQ ACC/A7PS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 125TH FIGHTER WING (ACC)
14300 FANG DRIVE
JACKSONVILLE, FLORIDA 32218-7933

October 31, 2012

Mr. Robert Thrower
Acting THPO
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502

125 FW/EMO
14300 FANG Drive
Jacksonville, FL 32218-7933

RE: F-35 Operational Beddown, Environmental Impact Statement (EIS)

Dear Mr. Rolin,

The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. A basing alternative is being considered at Jacksonville Air Guard Station, Jacksonville Florida. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Should there be any questions; feel free to contact me at (904) 741-7410 or by email: pedro.santiago.1@ang.af.mil.

Sincerely

PEDRO J. SANTIAGO, Lt Col, FLANG
Environmental Program Manager

cc:
File
NGB/A7AN
HQ ACC/A7PS

MOUNTAIN HOME AFB

Table 9. Mountain Home AFB Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Burns Paiute Tribe H.C. 71 100 Pasigo St. Burns, OR 97720	Yes (1/19/2010) (10/12/2012)	No	No Response to April 18, 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Northwest Band, Shoshone Brigham City Tribal Office 707 N. Main Street Brigham City, UT 84302	Yes (1/19/2010) (10/12/2012)	No	Not applicable	On April 22, 2013, Chairman Jason Walker returned the April 18, 2013 call and reported the Tribe did not have any comment on the F-35 EIS because it did not pertain to them. Consultation completed.
Paiute Shoshone Tribes of Fort McDermitt P.O. Box 457 McDermitt, NV 89421	Yes (1/19/2010) (10/12/2012)	No	No Response to April 18, 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Shoshone-Bannock Tribes P.O. Box 306 Fort Hall, ID 83203	Yes (1/19/2010) (10/12/2012)	No	No Response to April 18, 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.
Shoshone-Paiute Tribes of Duck Valley P.O. Box 219 Owyhee, NV 89832	Yes (1/19/2010) (11/19/2012)	No	No, in response to April 18, 2013 phone call	Consultation occurred on Monday, May 6, 2013 and the Tribes' concerns are addressed in the current EIS. Consultation (at the request of the Tribe) will continue as the Revised Draft EIS is released to the public.
Summit Lake Paiute Tribe Paiute Council 1708 H Street Sparks, NV 89431	Yes (1/19/2010) (10/12/2012)	No	No Response to April 18, 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012 with confirmation of receipt. Several phone calls requesting a response were made by the Air Force in 2012 and 2013. However, no response was received.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Tribal Chair
Burns Paiute Tribe
H.C. 71 100 Pasigo Street
Burns OR 97720

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 1 Nov 10. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Tribal Chair
Northwest Band, Shoshone
Brigham City Tribal Office
707 N. Main Street
Brigham City UT 84302

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Tribal Chairman
Paiute Shoshone Tribes of Fort McDermitt
P.O. Box 457
McDermitt NV 89421

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

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3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Tribal Chairman
Shoshone-Bannock Tribes
P.O Box 306
Fort Hall ID 83203

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

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3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

19 NOV 2012

Colonel Christopher M. Short
Commander
366 Gunfighter Avenue Ste 331
Mountain Home AFB ID 83648

Chairman Terry Gibson
Shoshone-Paiute Tribes of The Duck Valley Indian Reservation
P O Box 219
Owyhee NV 89832

Dear Chairman Gibson

The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org.

My predecessor initiated Section 106 of the National Historic Preservation Act, with the Shoshone-Paiute Tribes on November 1, 2010. However, we have not yet received a response. Air Combat Command (ACC) intends to finalize the draft EIS in the near future. Accordingly, if you wish to comment on the draft EIS per Section 106, I request you contact me by November 25, 2012. Alternatively, if you do not wish to comment, I request you contact me by November 25, 2012. I will convey your wishes to ACC, whichever option you select. Although you may choose not to comment on the draft EIS, I am open to any further discussion during our ongoing government-to-government meetings.

If you have any questions or concerns about this proposal, or request additional information, please contact me at 208-828-2366, and/or email at christopher.short@mountainhome.af.mil.

Sincerely

CHRISTOPHER M. SHORT, Colonel, USAF

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 366TH FIGHTER WING (ACC)
MOUNTAIN HOME AIR FORCE BASE IDAHO

12 Oct 12

Sheri L. Robertson
Chief, Conservation
366 CES/CEAN
1030 Liberator Street
Mountain Home AFB ID 83648

Tribal Chairman
Summit Lake Paiute Tribe
Paiute council
1708 H Street
Sparks NV 89431

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 1 Nov 10. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at 208-828-4247, sheri.robertson@mountainhome.af.mil, or 366 CES/CEAN 1030 Liberator Street, Mountain Home AFB ID 83648.

Sincerely

SHERI L. ROBERTSON, CIV
Chief, Conservation

SHAW AFB AND MCENTIRE JNGB

Table 10. Shaw AFB and McEntire JNGB Government-to-Government Consultation				
Tribe	***Consult Letters Sent (Yes/No)***	***Response Received***	***Concurrence (Yes/No)***	***Comments***
Catawba Indian Nation P.O. Box 11106 Rock Hill, SC 29731	Yes (1/19/2010) (10/24/2012)	No	Yes	Letter requesting concurrence of no effect was sent in October 2012. Several phone calls and emails requesting a response were made by the Air Force in 2013. In June 2013, the Air Force received notice that the Nation does not have any concerns with the proposed action and alternatives.
Muscogee (Creek) Nation Office of the Administration P.O. Box 580 Okmulgee, OK 74447	Yes (1/19/2010) (10/24/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012. Several phone calls and emails requesting a response were made by the Air Force in 2013. However, no response was received.
Tribe Historic Preservation Office Poarch Band of Creek Indians 5811 Jack Springs Road Atmore, AL 36502	Yes (1/19/2010) (10/24/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012. Several phone calls and emails requesting a response were made by the Air Force in 2013. However, no response was received.
The Eastern Band of Cherokee Indians Qualla Boundary Cherokee, NC 28719	Yes (1/19/2010) (10/24/2012)	No	No Response to April 2013 phone call	Letter requesting concurrence of no effect was sent in October 2012. Several phone calls and email requesting a response were made by the Air Force in 2013. However, no response was received.

DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

OCT 24 2012

FROM: 20 CES/CEAN (Attn: Mr. David Davis)
428 Chapin Street
Shaw AFB, SC 29152

TO: Tribal Historic Preservation Officer, Catawba Indian Nation
1536 Tom Steven Road
Rock Hill, SC 29730

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

2. The Air Force initiated a Section 106 process of the National Historic Preservation Act, with your agency on 15 December 2010. However, we have not received a response from you. Please provide a written response with any comments that you may have on the draft EIS to our address above NLT 9 November, 2012. Negative responses are required.

3. If you have any specific questions or concerns about this proposal, or require additional information, please contact me at (803)895-5325, david.davis@shaw.af.mil or the address above.

Sincerely,

DAVID Z. DAVIS, GS-11, DAFC
Cultural Resources Manager

Global Power For America

DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

FROM: 20 CES/CEAN (Attn: Mr. David Davis)
428 Chapin Street
Shaw AFB, SC 29152

OCT 24 2012

TO: Russell Townsend, THPO Qualla Boundary Reservation
P.O. Box 455
Cherokee, NC 28719

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Sincerely,

DAVID Z. DAVIS, GS-11, DAFC
Cultural Resources Manager

Global Power For America

DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

OCT 24 2012

FROM: 20 CES/CEAN (Attn: Mr. David Davis)
428 Chapin Street
Shaw AFB, SC 29152

TO: Mrs. Joyce A. Bear
Manager, Cultural Preservation Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Sincerely,

DAVID Z. DAVIS, GS-11, DAFC
Cultural Resources Manager

Global Power For America

DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

OCT 24 2012

FROM: 20 CES/CEAN (Attn: Mr. David Davis)
428 Chapin Street
Shaw AFB, SC 29152

TO: Mr. Robert Thrower, Acting THPO Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502

SUBJECT: F-35A Operational Beddown, Environmental Impact Statement (EIS)

1. The United States Air Force (Air Force) prepared a Draft Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the beddown of the F-35A Joint Strike Fighter aircraft at one or more Air Force installations within the continental United States. Basing alternatives being considered include Mountain Home Air Force Base, Idaho; Burlington Air Guard Station, Vermont; Hill Air Force Base, Utah; Jacksonville Air Guard Station, Florida; McEntire Joint National Guard Base, South Carolina; and Shaw Air Force Base, South Carolina. The draft EIS is available for your review and download at this web site: www.accplanning.org

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Sincerely,

DAVID Z. DAVIS, GS-11, DAFC
Cultural Resources Manager

Global Power For America

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

June 26, 2013

Attention: Nick Germanos
F-35A EIS Project Manager
HQ ACC/A7NS
129 Andrews Street, Suite 332
Langley Air Force Base, VA 23665-2769

Re. THPO #	TCNS #	Project Description
2013-7-1		F-35A Operational Wing Beddown Revised Draft EIS

Dear Mr. Germanos,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Totherow at 803-328-2427 ext. 226, or e-mail caitlinh@ccppcrafts.com.

Sincerely,

Caitlin Totherow for

Wenonah G. Haire
Tribal Historic Preservation Officer

OTHER AGENCY CORRESPONDENCE

OTHER AGENCY CORRESPONDENCE

Included with this version of the EIS are agency responses to the Draft and Revised EIS. Table 11 identifies the agencies and from whom the letters were sent, copies of the letters follow.

Table 11. Other Agency Correspondence	
Agency	***Signature***
All Locations	
U.S. Environmental Protection Agency	Susan E. Bromm
Department of the Interior, Region 4	Joyce Stanley
Burlington AGS	
White Mountain National Forest	Thomas G. Wagner
U.S. Fish and Wildlife Service, Region 5	Scott Kahan
Jacksonville AGS	
Florida Department of Environmental Protection	Sally B. Mann
Georgia State Clearinghouse	Barbara Jackson
Georgia Department of Natural Resources	Jim Ussery
Mountain Home AFB	
Department of the Interior, Region 4	Joyce Stanley
Bureau of Land Management, Boise District	Meagan M. Conroy
Shaw AFB and McEntire JNGB	
Georgia State Clearinghouse	Barbara Jackson
Georgia Department of Natural Resources	Jim Ussery

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 15 2013

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Mr. Nicholas Germanos
F-35A Operational Basing EIS Project Manager
HQ ACC/A7PS
129 Andrews Street, Suite 337
Langley AFB, VA 23665-2769

Dear Mr. Germanos:

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the Environmental Protection Agency (EPA) has reviewed the U.S. Air Force's revised draft Environmental Impact Statement (EIS) on the F-35A Operational Basing (CEQ No. 20130143).

The Air Force proposes to beddown new F-35A aircraft at one or more locations throughout the contiguous U.S. from 2015 to 2020. The Air Force identified Hill Air Force Base and Burlington Air Guard Station as the preferred alternatives for the initial operational beddown.

EPA commends the Air Force's commitment to continue to work with the affected communities to ensure adverse noise impacts are avoided to the greatest extent possible. EPA believes that the draft EIS provides an adequate discussion of the potential environmental impacts and we have not identified any potential environmental impacts requiring substantive changes. EPA has rated the draft EIS as LO – "Lack of Objections." A summary of EPA's rating is enclosed.

We appreciate the opportunity to review the revised draft EIS. The staff contact for the review is Candi Schaedle and she can be reached at (202) 564-6121.

Sincerely,

Susan E. Bromm

Susan E. Bromm
Director
Office of Federal Activities

Enclosure

SUMMARY OF RATING DEFINITIONS AND FOLLOW UP ACTION*

Environmental Impact of the Action

LO-Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impacts. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS sate, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1-Adequate
The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alterative and those of the alternatives reasonably available to the project or action. No further analysis or data collecting is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information
The draft EIS does not contain sufficient information for the EPA to fully assess the environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of the Federal Actions Impacting the Environment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 14 2012

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Mr. Nicholas Germanos,
F-35A Operational Basing EIS Project Manager
HQ ACC/A7PS
129 Andrews Street, Suite 337
Langley AFB, VA 23665-2769

Dear Mr. Germanos:

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the Environmental Protection Agency (EPA) has reviewed the U.S. Air Force's draft Environmental Impact Statement (EIS) on the F-35A Operational Basing (CEQ No. 20120098).

The Air Force proposes to beddown new F-35A aircraft at one or more locations throughout the contiguous U.S. from 2015 to 2020. The Air Force identified Hill Air Force Base and Burlington Air Guard Station as the preferred alternatives for the initial operational beddown.

EPA believes that the draft EIS provides an adequate discussion of the potential environmental impacts and we have not identified any potential environmental impacts requiring substantive changes. EPA has rated the draft EIS as LO – "Lack of Objections." A summary of EPA's rating is enclosed.

We appreciate the opportunity to review the draft EIS. The staff contact for the review is Candi Schaedle and she can be reached at (202) 564-6121.

Sincerely,

Susan E. Bromm

Susan E. Bromm
Director
Office of Federal Activities

Enclosure

United States Department of the Interior

OFFICE OF THE SECRETARY

Office of Environmental Policy and Compliance
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

ER 12/254
9043.1

June 4, 2012

Mr. Nicholas Germanos
HQ ACC/A7PS
129 Andrews Street, Suite 332
Langley AFB, VA 23665-2769

Re: Comments and Recommendations on the Draft Environmental Impact Statement (DEIS) for the F-35A Operational Wing Beddown located in Idaho, Utah, Vermont, South Carolina, and Florida

Dear Mr. Germanos:

The United States Department of the Interior (Department) has reviewed the DEIS for the F-35A Operational Wing Beddown project in four proposed sites located in Idaho, Utah, Vermont, South Carolina, and Florida. We offer the following comments.

Idaho

The comments deal exclusively with the proposal for beddown of F-35A aircraft at the Mountain Home Air Force Base (MHAFB) located in Elmore County, Idaho, with air space extending into Owyhee and Twin Falls Counties, Idaho. When reviewing proposed actions such as the F-35A operational wing beddown at MHAFB, the Department typically focuses on three broad categories of trust resources: 1) listed, proposed, and candidate species under the Endangered Species Act (Act) of 1973, as amended, 2) migratory birds, and 3) wetland and riparian areas. The Department provides recommendations for protective measures for listed species in accordance with the Act. Protective measures for migratory birds are provided pursuant to the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Wetlands are protected pursuant to Section 4 of the Clean Water Act, Executive Order 11990 (wetland protection), and Executive Order 11998 (floodplain management) as well as the Department's mitigation goal of "no net loss" of wetlands. The DEIS states that no wetlands or riparian areas will be affected by the proposed action at the MHAFB (Air Force 2012, p. MH4-61); therefore, wetlands and riparian areas will not be addressed further in these comments. Our comments regarding listed, proposed, and candidate species under the Act and migratory birds are provided below.

Endangered Species Act

Species listed as threatened or endangered receive full protection under the Act, while species proposed for listing are protected from actions that may jeopardize their continued existence. Candidate species have no formal protection under the Act; however, the Department encourages the formation of partnerships to conserve candidate species since these species by definition may warrant future protection. Proactive conservation efforts that address threats to a candidate species may preclude the need for future listing under the Act. The Department recommends that the final EIS fully analyzes the potential effects of the proposed F-35A beddown on any listed, proposed, or candidate species on MHAFB and its associated airspace.

Slickspot Peppergrass

Lepidium papilliferum (slickspot peppergrass), a species listed as threatened under the Act, is known to occur on the Air Force's Juniper Butte Range, which is identified in the MHAFB 2012 Interim Final Integrated Natural Resource Management Plan (INRMP) as part of the Mountain Home Training Range Complex. The existing 2004 INRMP and the soon to be final updated 2012 INRMP provide for conservation of this listed plant in concert with Air Force training activities and associated support actions. Activities described in the DEIS within the range of slickspot peppergrass are limited to overflights and dropping of ordnance. Effects of ongoing aircraft overflights and dropping of ordnance are described within the existing 2004 INRMP and the soon to be finalized updated 2012 INRMP, and have previously been addressed through section 7 consultation (USFWS 2010, entire; USFWS 2012, entire). We recommend that the final EIS state that the proposed F-35A operational wing beddown will comply with conservation measures for slickspot peppergrass as identified within the updated MHAFB 2012 INRMP.

Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus*) is a candidate for listing under the Act. The Idaho State Office of the Bureau of Land Management (Bureau) has recently developed maps identifying preliminary Priority Habitat and preliminary General Habitat, which are important areas for greater sage-grouse conservation in Idaho. The Bureau's greater sage-grouse preliminary Priority Habitat and General Habitat areas can be viewed at: http://www.blm.gov/id/st/en/sage-grouse_rmp_revision.html (last accessed on April 26, 2012). Airspace to be used for operations of the F-35A aircraft located at MHAFB overlies a significant portion of the northern segment of greater sage-grouse preliminary Priority Habitat Area F as well as portions of preliminary Priority Habitat Areas H and J as mapped by the Bureau. In addition, preliminary General Habitat for the greater sage-grouse as mapped by the Bureau also occurs below airspace associated with the MHAFB. Much of preliminary Priority Habitat area F is located within the Owyhee North and Jarbidge North airspace areas proposed to be used by F-35A operations associated with the MHAFB. In addition, the Owyhee North and Jarbidge North airspace areas also includes areas that were identified as Key Sage-Grouse Habitat and population strongholds for the greater sage-grouse within the 2006 Idaho Greater Sage-Grouse

Management Plan (Idaho Sage-grouse Advisory Committee 2006, p. 3–29). This Key Habitat overlaps with the Bureau's preliminary Priority Habitat Area F and preliminary General Habitat. The DEIS states that sonic booms will increase from the baseline level of 42 to 62 sonic booms per month in the Owyhee North airspace with 72 F-35A aircraft located at MHAFB. Similarly, sonic booms in the Jarbidge North airspace would increase from a baseline level of 44 booms per month to 66 sonic booms per month (Air Force 2012, p. MH-40). The DEIS further states that, "Although the total number of supersonic flights and sonic booms occurring would increase from baseline, studies of supersonic noise on birds and mammals indicate that animals tend to habituate to sonic booms and long term effects are not adverse" (Air Force 2012, pp. MH4-61, MH4-63). However, the Department recommends that the noise analysis within Appendix C of the final EIS considers additional information in describing the potential effects of increased supersonic noise disturbance from operation of F-35A aircraft at the MHAFB on the greater sage-grouse as well as other wildlife species.

Research has demonstrated both direct and indirect effects of anthropogenic noise on wildlife. These effects include interference with acoustic displays during breeding and lowered predator detection rates (Habib et al. 2007, p. 181). In addition, researchers from Dr. Gail Patricelli's lab at the University of California Davis are conducting ongoing research regarding greater sage-grouse responses to noise (http://www.eve.ucdavis.edu/gpatricelli/Patricelli_Research_Interests.html#noise last accessed April 26, 2012). Preliminary results from Dr. Patricelli's lab, as presented at the 2010 Western Association of Fish and Wildlife Agencies Sage and Sharp-tailed Grouse Workshop, indicated that anthropogenic noise is detrimental to greater sage-grouse at the individual and population level. Noise generated by military training activities (e.g., aircraft over flights, dropping of ordnance) from up to 72 separate F-35A aircraft may affect individual sage-grouse by interfering with seasonally important behaviors and use of habitat including lekking, nesting, brood-rearing, and wintering.

While candidate species have no legal status under the Act, we encourage proactive conservation efforts for the greater sage-grouse as well as other special status species and habitats as proactive conservation may preclude the need to list species under the Act. Proactive efforts to address identified issues such as noise disturbance during periods critical for reproduction will benefit the greater sage-grouse. For example, the Air Force may schedule or locate training flights that are likely to generate sonic booms to avoid active greater sage-grouse lekking sites during critical periods, which typically would be between March 15 and May 15 between 6 pm and 9 am. We encourage the Air Force to implement conservation measures designed to avoid or minimize the effects of noise disturbance on the greater sage-grouse associated with the proposed action in the Owyhee North and Jarbidge North airspace areas.

As you know, the Idaho Department of Fish and Game (IDFG) is the primary agency responsible for the management of the greater sage-grouse within the State of Idaho. The State of Idaho is actively partnering with multiple entities for conservation of the greater sage-grouse. We encourage the Air Force to continue to work closely with the IDFG to identify and implement conservation measures for greater sage-grouse local populations, including conservation

measures to address potential effects of increased aircraft noise associated with the proposed F-35A operational wing beddown at the MHAFB.

The Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act

Although no longer included on the list of threatened and endangered species in the lower 48 states pursuant to the Act as of August 7, 2007, the bald eagle (*Haliaeetus leucocephalus*) continues to be federally protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The Department has developed National Bald Eagle Management Guidelines (Guidelines) to advise project proponents when and under what circumstances the protective provisions of these Acts may apply to their activities to help avoid violations of the law. The Guidelines and additional information on protection for bald eagle are available on the U. S. Fish and Wildlife Service's website at http://www.fws.gov/migratorybirds/baldeagle.htm (last accessed April 26, 2012). The Department has also developed guidance for permitting non-lethal take of both the bald eagle and the golden eagle (*Aquila chrysaetos*) over the past few years. In addition, research has shown that many migratory bird species are in decline, facing a growing number of threats on their migration routes and in both their summer and winter habitats. The greatest threat to birds, and to all wildlife, continues to be the loss or degradation of habitat due to human development and disturbance. The DEIS includes discussion of avoidance of impacts to migratory birds, including bald and golden eagles, associated with the MHAFB. The Department recommends that the preferred alternative in the final EIS address migratory birds through best management practices to minimize effects of the proposed action on migratory birds as described in the BASH plan and the MHAFB 2012 INRMP.

Additionally, the National Park Service (NPS) is responsible for ensuring the protection of our Nation's finest natural and cultural resources and to leave them unimpaired for the enjoyment of future generations. It is our understanding that F-35As would use only existing or currently assessed airspace and ranges. The F-35A will not require specific changes to airspace structure or size, nor are any changes to range target configurations and types required to accommodate F-35A training and operations. The F-35As will fly above 23,000 feet mean sea level (MSL) 80 percent of the time and above 5,000 feet MSL 95 percent of the time. However, the DEIS did not specify how or if any low level training would be performed for the F-35A.

We reviewed the maps of the military operating airspace (MOA) and were unable to find maps showing the military training routes (MTR) linking to the airspaces. If Instrument Routes (IR) and/or visual Routes (VR) will be used, please provide information in the EIS about how often and where F-35As are flying during the 5 percent of time when F-35A operations are below 5,000 feet MSL.

The Department encourages low level training flights occur outside NPS units to help preserve the natural soundscapes of parks consistent with our Management Policies. NPS Management Policies, Section 4.9, Soundscape Management, states "the Department will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts." This is consistent with 40 CFR. §1508-27b, "Unique characteristics of the geographic area such as

proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas" should be considered when evaluating intensity of effects.

We support your preferred alternative, Hill AFB with 72 aircraft. However, we remain concerned about potential indirect noise impacts at the following specific part units.

- City of Rocks National Reserve
- California National Historic Trail
- Great Basin National Park
- Golden Spike National Historic Site

Please provide the Department with details on the use of the MTRs and how F-35As will access the MOAs. The attachment provides a list of scientific reports and published studies detailing the effects of sounds on wildlife and related topics. We encourage you to consider this information as appropriate in the final Environmental Impact Statement (EIS).

Moreover, there are no significant impacts in South Carolina. Minor wetland fill, aesthetics, or cultural impacts may occur but there is no critical habitat or Threaten and Endangered Species on the sites, or nearby. Utah and Vermont have no comments on the project at this time.

Thank you for the opportunity to comment on the proposed project. If you require additional information regarding the proposed F-35A operational wing beddown at the MHAFB, please contact Barbara Chaney on (208) 378-5259 and Vickie McCusker on (970) 267-2117 for information regarding the effects of sounds on wildlife. I can be reached on (404) 331-4524 or via email at joyce_stanley@ios.doi.gov.

Sincerely,

Joyce Stanley, MPA
Regional Environmental Protection Assistant

for

Gregory Hogue
Regional Environmental Officer

Attachment(s)

cc: Jerry Ziewitz – FWS – Region 4
Stavrakas Baker – FWS Region 1
Brenda Johnson - USGS
Anita Barnett – NPS
Chester McGhee – BIA

Li-Tai Sikiu Bilbao - OSMRE
OEPC – WASH

References Cited

Habib, L., E. M. Bayne, and S. Boutin. 2007. Chronic industrial noise affects pairing success and age structure of ovenbirds. Journal of Applied Ecology. 44:176-184.

Idaho Sage-grouse Advisory Committee. 2006. Conservation Plan for the Greater Sage-grouse in Idaho. 358 pp.

U.S. Air Force (Air Force). 2012. Draft United States Air Force F-35A Operational Basing Environmental Impact Statement. March 2012.

U.S. Fish and Wildlife Service (USFWS). 2012. Biological Opinion on the Effects of Mountain Home Air Force Base 2012 Integrated Natural Resource Management Plan in Elmore, Owyhee, and Twin Falls Counties, Idaho on the Slickspot Peppergrass *(Lepidium papilliferum).* U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, Boise Idaho. April 2012. Tracking Number 01EIFW00-2012-F-0188. 5 pp. plus attachments.

U.S. Fish and Wildlife Service (USFWS). 2010. Biological Opinion on the Effects of U.S. Air Force Ongoing Actions at Juniper Butte Range and in Owyhee County, Idaho on the Slickspot Peppergrass *(Lepidium papilliferum).* U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, Boise, Idaho. October 2010. Tracking Number 14420-2010-F-0405. 110 pp.

Information attached to comment M131 is available upon request or from the websites indicated below.

1. Annotated Bibliography for Impacts of Noise on Wildlife. National Park Service. Natural Sounds Program. Authors: Rank Turina and Jesse Barber. Accessible at the following website: http://www.nature.nps.gov/sound/assets/docs/Wildlife_AnnotatedBiblio_Aug2011.pdf.

2. The Effect of Noise on Wildlife: A Literature Review. Author: Autumn Lynn Radle. Accessible at the following website: http://wfae.proscenia.net/library/articles/radle_effect_noise_wildlife.pdf.

3. Visitor Experience and Soundscapes: Annotated Bibliography by National Park Service and Colorado State University. Authors: Ericka Pilcher and Frank Turina. Accessible at the following website: http://www.nature.nps.gov/naturalsounds/pdf_docs/VisitorExperience_Soundscapes_AnnotatedBiblio_29Aug11.pdf.

Burlington AGS

USDA United States Department of Agriculture | Forest Service | White Mountain National Forest
71 White Mountain Drive
Campton, NH 03223
Comm: (603) 536-6100
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File Code: 1950
Date: May 25, 2012

Nick Germanos
HQ ACC/A7PS
129 Andrews Street, Suite 337
Langley AFB, VA 23665-2769

Dear Mr. Germanos

Attached please find our comments on the F-35 Operational Basing Draft Environmental Impact Statement.

Our comments focus on the impacts of the use of the Yankee Laser and Condor Scotty Military Operation Areas by the aircraft proposed for location at the Burlington, VT Air Guard Station. Portions of this airspace are over the geographical extent of the White Mountain National Forest. Please see the attached comments for details of our concerns.

In addition to the comments we are requesting that you provide GIS shape files with appropriate metadata for the Yankee Laser and Condor Scotty airspaces (both the MOA's and the Air Traffic Control Assigned Airspace). This information should be sent to Roger Simmons, Natural Resources Staff Officer for the WMNF.

I am also requesting you provide an electronic copy of the FEIS upon completion of that document.

If you wish to follow up on any of our comments please contact Roger Simmons at either krsimmons@fs.fed.us or 603 536-6205.

Sincerely,

THOMAS G. WAGNER
Forest Supervisor

cc: Stacy Lemieux, Marianne Leberman

White Mountain National Forest Comments on the F-35 Operational Basing Draft Environmental Impact Statement

Our comments focus on the noise impacts of the use of the Yankee Laser and Condor Scotty Military Operation Areas by the aircraft proposed for location at the Burlington, VT Air Guard Station. Portions of this airspace are over the geographical extent of the White Mountain National Forest, which is managed by the USDA Forest Service.

We feel that the discussion of noise impacts from the proposed use in these two areas (Yankee Laser and Condor Scotty) is inadequate to completely inform the decision maker of impacts to users of the White Mountain National Forest (WMNF). In particular, the DEIS lacks any analysis of impacts to the users of the 6 Congressionally designated Wilderness Areas contained within the WMNF and those portions of the Appalachian National Scenic Trail (AT) that lie beneath the MOA's.

The Wilderness areas designated by Congress were set aside under the provisions of the Wilderness Act of 1964 (Public Law 88-577 (16 U.S. C. 1131-1136)) which includes the following "...An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which ... (2) has outstanding opportunities for solitude..." Many people using wilderness areas are there to experience the solitude of nature and expect to hear little or no noise that is obviously tied to human civilization. We agree with your statement (page MH4-76) that "Aircraft over flights can adversely affect the solitude of the wilderness experience for some individuals" and feel that the decision maker for this action should be informed about impacts to these areas and users. Discussion of wilderness areas and the AT should be explicit in all the airspace discussions where appropriate.

In section 3.2.2.1 on page BR4-35, the DEIS provides the baseline noise levels for each of the airspace units. There is no reference made to how these measurements were determined though the general methodology is alluded to in an earlier paragraph. Appendix C in volume 2 (noise modeling) does not provide this explanation as one would expect it to.

The DEIS indicates there will be a perceptible increase in noise within the Yankee Laser MOA (Table 2-12, page 2-31; section BR3.2.2.2, page BR4-35). The analysis in section BR3.2.2.2 (pages BR4-35 to BR4-37) is inadequate to disclose to the deciding official that one of the noise receptors will be recreation users in the WMNF Wilderness Areas. No mention is made of the wilderness areas in the text of the discussion. Given that noise will be increasing in an area set aside for solitude we believe this specific impact, even though it is below the 65 L_{dnmr} level set for significance, should be disclosed. There should be an analysis similar to the one that is in the Mountain Home section, MH3.10.2.

Page BR4-70 under ANG Scenarios 1 and 2. The assertion that *"although increases in the noise would be perceptible, and could cause annoyance, the overall noise levels would remain low"* is somewhat misleading. We believe that a more correct statement would be to acknowledge that annoyance is likely to increase particularly within the designated wilderness areas, though overall noise levels would remain below the significance threshold of 65 L_{dnmr}.

There are several research papers that we believe are germane to the issue of aircraft noise over wilderness areas which should be considered in developing your analysis of impacts. These papers offer

research results that aircraft noise is annoying to recreational users even when the noise is below harmful levels. Because the modeled F35 operations are projected to increase the noise levels over the wilderness areas within the WMNF, we suggest that you incorporate their findings in your discussion of impacts. We examined both the references sections for the DEIS and Appendix C and found no listing of these or other references related to noise impacts on recreational users. These papers are:

> Fidell, S., et al, 1996, Effects of aircraft over flights on wilderness recreationists in *Journal of Acoustical Society of America,* Volume 100, Issue 5, pp. 2909-2918
>
> Mace, B. L.; Bell, P. A. and Loomis, R. J., APR-MAY 1999, Aesthetic, affective, and cognitive effects of noise on natural landscape assessment, *SOCIETY & NATURAL RESOURCES,* Volume: 12 Issue: 3 Pages: 225-242 DOI: 10.1080/089419299279713

In addition to our concerns about adequate analysis of impacts to wilderness areas, we want to point out a few places where information is outdated or missing.

Table 2-12 (page 2-38) makes no mention of the wilderness areas or the AT, which we believe is an oversight since these types of areas are mentioned for the Mountain Home AFB.

Figure BR3-10.4 on page BR4-66 contains outdated information.

- The figure does not contain the latest changes in wilderness boundaries from the New England Wilderness Act of 2006. We can provide a current shape file of their boundaries within the context of the forest boundaries.
- The Yankee Laser airspace shown in the figure does not agree with the Yankee Laser airspace shown in Figure BR2.2-1, page BR4-7. We assume that Figure BR2.2-1 is correct.
- Table BR3.10-4 on page BR4-67 fails to mention the Caribou-Speckled Wilderness and the Wild River Wilderness as part of the WMNF under the Yankee Laser airspace. This table lists the "Great Gulch Wilderness" which should be relabeled as the Great Gulf Wilderness.

The paragraph on the Yankee Laser airspace on page BR4-68 fails to mention the Caribou-Speckled Wilderness and the Wild River Wilderness as part of the WMNF. Please also correct Great Gulch Wilderness to Great Gulf Wilderness.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 Westgate Center Drive
Hadley, MA 01035-9589

In Reply Refer To:
FWS/Region 5/NWRS

JUN - 8 2012

Mr. Nicholas Germanos
HQ ACC/A7PS
129 Andrews Street, Suite 332
Langley AFB, Virginia 23665-2769

Re: Draft Environmental Impact Statement – United States Air Force F-35A Operational Basing.

Dear Mr. Germanos:

The U.S. Fish and Wildlife Service (Service), Region 5, National Wildlife Refuge System, has reviewed the draft Environmental Impact Statement (EIS) entitled "F-35A Operational Basing", which assesses the impacts of "basing" the F-35A at six military bases across the country and their training operations in Military Operations Areas (MOA). One of those military bases, Burlington Air Guard Station (AGS), is located in Region 5 and the Yankee and Condor MOA's overlay two National Wildlife Refuges (NWR), the Silvio O. Conte National Fish and Wildlife Refuge (NFWR), Pondicherry Division, and the Umbagog NWR, respectively.

This letter provides comments relating to potential impacts to the Umbagog NWR, and the Pondicherry Division of Silvio O. Conte NFWR. Comments pursuant to Section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d), or other comments from the U.S. Fish and Wildlife Service Ecological Services Division will be provided under separate cover.

The Service recognizes the need for the type of training described in the draft EIS and the valuable services provided by the Air Force and the Air National Guard. However, the Service established each refuge for specific purposes and training over these refuges has the potential to impact their missions. The Service looks forward to working with you to identify effective ways to accomplish both of our missions, while protecting wildlife resources. We recognize that the draft EIS identifies replacing legacy F-16 aircraft with the F-35A and that the F-35A will spend a larger percentage of its time training at higher altitudes than the F-16. Training at higher altitudes will have fewer impacts to the mission of each NWR when compared to low level overflights. We thank you for the opportunity to review the document and provide the following information and recommendations.

The mission of the Service is "[w]orking with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." The National Wildlife Refuge System's mission, as established by the National Wildlife Refuge Improvement Act of 1997, is "…to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

Umbagog NWR was established for four purposes under the following authorities:
(1) "...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions..." (Emergency Wetlands Resources Act of 1986, 16 U.S.C. 3901(b));
(2) "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." (Migratory Bird Conservation Act, 16 U.S.C. 715d);
(3) "...for the development, advancement, management, conservation, and protection of fish and wildlife resources..." (Fish and Wildlife Act of 1956; 16 U.S.C. 742f(a)(4)); and
(4) "...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." (Fish and Wildlife Act; 16 U.S.C. 742f(b)(1)).

Silvio O. Conte NFWR, Pondicherry Division was established for the following purposes:
(1) "...to conserve, protect and enhance the Connecticut River populations of Atlantic salmon, American shad, river herring, shortnose sturgeon, bald eagles, peregrine falcons, osprey, black ducks, and other native species of plants fish and wildlife;"
(2) "...to conserve, protect and enhance the natural diversity and abundance of plant, fish and wildlife species and the ecosystem upon which these species depend within the refuge;"
(3) "...to protect species listed as endangered or threatened, or identified as candidates for listing, pursuant to the Endangered Species Act of 1973 as amended (16 U.S. 1531 et seq.);"
(4) "...to restore and maintain the chemical, physical and biological integrity of wetland and other waters within the refuge;"
(5) "...to fulfill the international treaty obligations of the United States relating to fish and wildlife and wetlands;" and
(6) "...to provide opportunities for scientific research, environmental education, and fish and wildlife oriented recreation and access to the extent compatible with the other purposes stated in this section."

The operations as proposed could negatively impact both NWRs and the purposes for which they were established. Umbagog NWR and the Service have already provided comments on the draft EIS titled "Modification of Condor 1 and Condor 2 Military Operations Area" in relation to impacts of overflights on Umbagog NWR. Umbagog NWR and Service comments in response to the draft Environmental Assessment (EA) and subsequent draft EIS were provided on July 16, 2007, and December 21, 2009, respectively. Impacts of low level training to Umbagog NWR were described in those comments and remain relevant for the training component of this draft EIS. We were disappointed to see that Umbagog NWR was misrepresented throughout the draft EIS as "Lake Umbagog National Wilderness Reserve." We were further disappointed that the current Umbagog NWR boundary was omitted from Figures BR2.2-1 and Figure BR3.2-4. On figure BR3.10-4, where Umbagog NWR is portrayed as "Lake Umbagog NWR," an old, out-of-date boundary line was used. We feel that it is imperative that you consider the impacts to the entire Umbagog NWR boundary area and we are disappointed that the information we had provided to the Air National Guard in response to the draft EIS for the proposed modification of the Condor MOA was not used in the development of this draft EIS. We would be happy to provide you with our boundary shape file and more accurate acreage figure for Table BR3.10-4 since the acres you report there for Federal land are significantly low. The total potential impact to Umbagog NWR is approximately 12,186 acres.

Discussions in section BR 3.10.2 regarding the Yankee Laser MOA should also include the Silvio O. Conte NFWR, Pondicherry Division (6,405 acres).

Both of the NWRs were established because of their significant value to wildlife, particularly wetland-dependant wildlife and migratory birds. Wildlife are particularly diverse and abundant on the NWRs. For this reason, and many others, we believe different standards should be applied for overflight operations over NWRs than the surrounding landscape. This is important not only to protect wildlife, but also to ensure visitors who come to enjoy the wildlife continue to have high quality experiences. We are disappointed that in BR 3.10.22, no discussion of impacts of low-level jets on visitors to the refuges exists. FAA Order 1050.1e provides for stricter FAA noise standards over national wildlife refuges. On page BR4-70, you acknowledge that "the FAA and DoD have identified and published avoidance criteria for specific aviation-related or noise sensitive areas such as National Parks and Wilderness Areas." The FAA's aeronautical charts include NWRs in that statement by stating that "all aircraft are requested to stay 2,000 foot above the surface of the following: ....National Wildlife Refuges....administered by the U.S. Fish and Wildlife Service..." We request that training of all military aircraft stay a minimum of 2,000 feet above ground level (AGL) over NWRs to reduce impacts to the mission of the refuge and the public's enjoyment of the refuge. Further, we request that you identify Umbagog NWR and Pondicherry Division on all charts or other navigational aids used by your pilots to assist them in avoiding the refuge. We observe military aircraft performing low level flights over Umbagog NWR several times each year. These aircraft are well below 2,000 feet AGL and are usually seen outside of the MOA, flying over portions of the refuge in New Hampshire and Lake Umbagog itself. We further request that you provide us with a phone number that we can call to notify appropriate authorities when this occurs.

A greater number of species of concern are known to be present on both of the NWRs than are acknowledged in the draft EIS, and may be impacted by the proposed actions. The Umbagog NWR supports one of the largest populations of common loons and ospreys in New Hampshire. Umbagog NWR also supports large numbers of waterfowl and has been identified in the North American Waterfowl Management Plan (2004) as a waterfowl 'focus area', indicating its importance from a regional standpoint. Species of concern such as the American black duck and ring-necked duck commonly breed here. Four bald eagle nests are located on or near the refuge. Juvenile bald eagles are also commonly observed and eagles are also known to winter on the refuge. The Umbagog NWR has recently confirmed occurrences of other species of concern including: spruce grouse, pied-billed grebe, rusty blackbird, three-toed woodpecker, and American marten. Peregrine falcons forage in the area and are known to nest near the NWRs. Golden eagles have been observed foraging within 10 miles of the refuge boundary in recent years. Although not a "species of concern," white-tailed deer are near the northern limit of their range here and are dependent on deer wintering areas to get through harsh New Hampshire and Maine winters. The NWRs include several large deer wintering areas that play a critical role in deer over-winter survival. Deer are particularly vulnerable to any disturbance that causes them to expend additional energy during the winter. These deer wintering areas have assumed even greater importance as the industrial timberlands surrounding the refuge have been harvested and managed for non-wildlife values.

The list of species potentially impacted by this action on page BR4-53 is woefully inadequate and includes a species that doesn't occur in the east and a species that doesn't occur on this continent. *Xerus erthropus,* listed in BR 3.6.2.1, is an African species, and the badger is only found in the western and central United States. The poor quality of this section does not lend confidence to the analysis of the wildlife impacts described in the draft EIS.

Section BR 3.6.2.1 lists common species, but Umbagog NWR and the Pondicherry Division are important for a large number of migratory birds (both nesting & migration habitat) and both include designated National Natural Landmarks and Important Bird Areas. The Pondicherry Division also includes a

National Recreation Trail. There are 129 bird species that nest at Pondicherry and 103 bird species that nest at Umbagog NWR.

Section BR 2.6.2.1 should include New Hampshire in the list of states associated with Burlington AGS training airspace.

Although the draft EIS cites studies that found no significant impact of overflights to wildlife, the vast majority of wildlife disturbance studies, including those that have found "no significant impacts" have also included the caveat that wildlife response to disturbance is extremely variable. Responses vary with the age, sex, and prior experience of the animal, time of day, season, reproductive condition, topography, weather, type of aircraft, behavior of the aircraft, and a host of other factors. As a result, different studies have come up with very different results. Most studies conclude that disturbance impacts are best evaluated through species and site-specific research.

Moreover, low elevation air traffic over the refuges is infrequent and wildlife in the area are not exposed to enough flights to assume that wildlife will readily "habituate" without suffering any long term adverse effects. In fact, some studies have found that in certain circumstances bald eagles are slow to habituate to disturbance (Fraser et al. 1985). BR 3.6.2.2 states "As the area is currently used by legacy aircraft, wildlife should be habituated to the noise." This probably isn't true for the Pondicherry Division (Jefferson & Whitefield, New Hampshire) because most air traffic is associated with a small regional airport adjacent to the refuge. We are not aware of existing low level jet flights in the vicinity of Pondicherry and the current limited volume of prop planes using the Mt. Washington Regional Airport does not appear to be a substantive impact to wildlife. However, low-level jet flights would be a substantial change and cause for concern, particularly for migratory nesting birds. Most nesting birds at Umbagog NWR and the Pondicherry Division travel thousands of miles to winter habitats and are generally short-lived. It is not valid to conclude that nesting birds in any particular year are habituated to jet aircraft noise that occurred in previous years. The ability of wildlife to habituate may be further compounded as it appears that disturbance will occur at unpredictable intervals and locations when training is no longer confined to the Military Training Routes (MTRs). The randomness increases the potential to "startle" wildlife and the result could be significant for certain species at a specific location, such as a nesting bald eagle. Waterfowl also appear to be particularly sensitive to aircraft disturbance and have been found to not readily habituate. At least one study found that disturbances might cause energetic losses in waterfowl (Davis and Wisley, 1974 *In* Knight and Gutzwiller, 1995). In addition, the disturbance distances relied upon in the EIS are based on ground disturbances. The combination of noise with the visual stimulus of a large jet aircraft approaching an animal may cause greater disturbances. Given these uncertainties, and the lack of more specific information on the sensitivity to aircraft disturbance to many of the refuge's species, we believe a stricter noise standard and increased buffer are appropriate over the refuge.

Section BR 3.6.2.2 states that most of the flights (95%) will be above 5,000 feet. These should pose no issues for the refuge; however, we would be concerned if the remaining 5% will be below 2,000 feet.

The environmental consequences section only discusses bird strikes and concludes that there will be no impacts to migratory birds. Discussion of the potential impacts to nesting migratory birds from low flying jet aircraft noise is missing.

In the description of the Condor Scotty Airspace on page BR4-62, the MOA is described as a single unit with a floor of 7,000 feet AGL. It does not acknowledge the low elevation flight corridors (MTRs) (VR-840/1/2) that have a training floor that is considerably lower. Training in these MTRs over Umbagog

NWR would have a potential impact of 3,133 acres and the total potential impact of training in the Condor Scotty MOA to Umbagog NWR is estimated to be 12,186 acres. On the same page, the draft EIS lists management plans that apply to areas under the Condor Scotty MOA. The Umbagog NWR's Comprehensive Conservation Plan (CCP) is a publically reviewed EIS that was signed into effect in January 2009. We request that you add the Umbagog NWR CCP to the list of plans this action could potentially impact.

For all of these reasons, the Service respectfully requests that the Air Force and the Burlington Air National Guard enact and respect the 2,000 foot AGL buffer area for Umbagog NWR and Pondicherry Division, similar to those afforded to other wilderness and wildlife refuge areas. We further request that you update all figures with our accurate boundary lines, acreage, and names. We look forward to working cooperatively with you. If you have any questions regarding the Service's comments relating to the Umbagog NWR, please contact Mr. Paul Casey, Refuge Manager, at (603) 482-3415 x151. If you have any questions relating to the Silvio O. Conte NFWR, Pondicherry Division, please contact Mr. Barry Parrish at (413) 548-8002 x113.

Sincerely,

Acting

Scott Kahan
Regional Chief
National Wildlife Refuge System

Citations:

Davis and Wisely (1974) cites in Bowles, A.E. 1995. Responses of wildlife to noise. *In* Wildlife and Recreationists: coexistence through management and research. R.L. Knight and K.J. Gutzwiller, eds. Island Press, Wash. D.C. 372 pp.

Fraser, J.D., L.D. Frenzel, and J.E. Mathisen (1985) The impact of human activities on breeding bald eagles in north-central Minnesota. J. Wild. Manag.: 49(3): 582-592

Jacksonville AGS

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

June 21, 2013

Mr. Nick Germanos, Project Manager
Department of the Air Force
HQ ACC/A7NS
129 Andrews Street, Suite 332
Langley AFB, VA 23665-2769

RE: Department of the Air Force – Revised Draft Environmental Impact Statement
F-35A Operational Basing at Jacksonville Air Guard Station (AGS),
Jacksonville International Airport – Duval County, Florida.
SAI # FL201204126196C

Dear Mr. Germanos:

Florida State Clearinghouse staff has reviewed the revised Draft Environmental Impact Statement (EIS) under the following authorities: Presidential Executive Order 12372; Section 403.061(42), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

Based on the information contained in the revised Draft EIS and minimal project impacts, the state has determined that the proposed federal activities in Florida are consistent with the Florida Coastal Management Program (FCMP). The state's continued concurrence will be based on the activities' compliance with FCMP authorities, including federal and state monitoring of the activities to ensure their continued conformance, and the adequate resolution of any issues identified during subsequent reviews.

Thank you for the opportunity to review the revised document. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive, S.E., Suite 1154, Atlanta, Georgia 30334
Mark Williams, Commissioner
Environmental Protection Division
Judson H. Turner, Director
404/656-2833

May 17, 2012

Mr. Nick Germanos
F-35A EIS Project Manager
HQ-ACC/A7PS
129 Andrews Street
Suite 102 (Rm 337)
Hampton, VA 23665-2769

RE: Comments on the *Draft Environmental Impact Statement (EIS) for F-35A Operational Wing Beddown*, received April 9, 2012

Dear Mr. Germanos:

The Georgia Environmental Protection Division (EPD) has completed its review of the above-referenced document. Thank you for the opportunity to comment. EPD has no comments at this time.

Sincerely,

Jim Ussery, P.E.
Assistant Director

JU:ap
File: F-35A Operational Wing Beddown (NEPA)
S:\RDRIVE\AMY\DoD Unit\NEPA\Air Force\F-35a Beddown EIS.doc

Mountain Home AFB

United States Department of the Interior

OFFICE OF THE SECRETARY

Office of Environmental Policy and Compliance
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

ER 13/0373
9043.1

July 15, 2013

Mr. Nicholas Germanos
HQ ACC/A7PS
129 Andrews Street, Suite 332
Langley AFB, VA 23665-2769

Re: Comments of the Revised Draft Environmental Impact Statement (DEIS) for the F-35A Operational Basing at Mountain Home Air Force Base – Elmore, Owyhee, and Twin Falls Counties, Idaho – 01EIFW00-2012-CPA-0058

Dear Mr. Germanos:

The United States Department of the Interior (Department) has reviewed the revised DEIS for the F-35A Operational Basing at Mountain Home Air Force Base at Elmore, Owyhee, and Twin Falls Counties, Idaho. The revised DEIS analyzes six proposed sites located in five states, one of which includes the Mountain Home Air Force Base (MHAFB) located in Elmore County, Idaho, with air space extending into Owyhee and Twin Falls Counties, Idaho. The comments below deal exclusively with proposal for basing and beddown of F-35A aircraft at the MHAFB and associated airspace located within the State of Idaho.

We thank the Air Force for considering our original comments provided on the DEIS which we provided in our June 4, 2012 letter; we continue to stand by our original comments. However, since submission of our comments on the original DEIS, be aware that the status of *Lepidium papilliferum* (slickspot peppergrass) has changed. On August 8, 2012, the United States District Court for the District of Idaho ordered that the final rule listing slickspot peppergrass as a threatened species under the Endangered Species Act (Act) of 1973, as amended, be vacated and remanded for further consideration consistent with the court's decision. At this time, the Department is still awaiting legal advice on the interpretation of this decision. Until we receive further legal guidance, the Department is considering slickspot peppergrass to be a species proposed for listing as endangered under the Act. The Department continues to encourage proactive conservation of this endemic southern Idaho plant as our agency addresses the court's decision regarding slickspot peppergrass.

We applaud the Air Force for providing more extensive analyses on the effects of noise on wildlife, including the greater sage-grouse (*Centrocercus urophasianus*, in the revised DEIS. However, we continue to encourage conservation efforts for the greater sage-grouse as proactive conservation may preclude the need to list this species under the Act. In our June 2012 comments, we encouraged the Air Force to consider recent research from Dr. Gail Patricelli's lab at the University of California Davis regarding greater sage-grouse responses to noise as a basis for use of conservation measures to minimize potential Project-related noise effects to this candidate species. We have enclosed a copy of a recent peer-reviewed article on the effects of intermittent noise on greater sage-grouse lek attendance co-authored by Dr. Patricelli for your consideration (Blickley et al. 2012, entire).

Thank you for your interest in threatened and endangered species conservation. If you have questions or need additional information, please contact Barbara Chaney on (208) 378-5259 I can be reached at (404) 331-4524 or via email at joyce_stanley@ios.doi.gov.

Sincerely,

Joyce Stanley, MPA
Regional Environmental Protection Specialist

Attachment(s)

cc: Jerry Ziewitz – FWS
Gary Lecain - USGS
Anita Barnett – NPS
OEPC – WASH

References Cited

Blickley, J. L., D. Blackwood, and G. L. Patricelli. 2012. Experimental Evidence for the Effects of Chronic Anthropogenic Noise on Abundance of Greater Sage-Crouse at Leks. Conservation Biology. 26(3). Pp. 461-471.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Boise District Office
3948 Development Avenue
Boise, Idaho 83705
http://www.id.blm.gov/offices

TAKE PRIDE IN AMERICA

In Reply Refer To: 1610

Date: May 31, 2012

Mr. Nick Germanos
F-35 A EIS Project Manager
HQ ACC/A7PS
129 Andrews Street, Suite 102 (RM 337)
Hampton, VA 23665-2769

The Boise District Bureau of Land Management (BLM) reviewed the F-35A Operational Basing Environmental Impact Statement (EIS) and provides the following comments regarding the analysis.

The analysis of the proposed action for Mountain Home AFB states that: "*persons on the ground would perceive an increase in noise under ACC Scenarios 2 and 3 in Owyhee and Jarbidge. Such increases would likely add to the percentage of the population annoyed by aircraft noise. Persons recreating in special land use areas, such as wilderness areas, may consider additional noise especially intrusive. A noticeable increase in sonic booms in the Jarbidge and Owyhee airspaces would add to this annoyance and sense of intrusion.*" Although people would feel a sense of intrusion from sonic booms, the DEIS states that there are no effects anticipated to the greater sage grouse from the proposed change in subsonic and supersonic operations. It also states that although the total number of supersonic flights and sonic booms occurring would increase from baseline, studies of supersonic noise on birds and mammals indicate that animals tend to habituate to sonic booms and long term effects are not adverse. This statement contradicts recent research by Blickley et al. 2012 on noise effects at sage grouse leks that suggests that intermittent noise has a greater effect at lek attendance than continuous noise (see attached Blickley et al. 2012).

Furthermore, the noise effects analysis in Appendix C and the environmental consequences chapters are silent on sage grouse. Therefore, the effects analysis for sage grouse does not adequately address this important resource concern because the potential effects from overflights are unknown. Given the grouse's current situation and the potential for listing under the Endangered Species Act, a thoroughly robust noise analysis that discloses the effects of basing the F-35 A at Mountain Home on sage grouse should be completed before a decision is made.

If you have any questions, please contact Jonathan Beck, Boise District Planning and Environmental Coordinator, at 208-384-3305.

Sincerely,

Meagan M. Conry
Boise District

CC:Blickley, etal. 2012

McEntire JNGB and Shaw AFB

OFFICE OF PLANNING AND BUDGET

Nathan Deal
Governor

Debbie Dlugolenski Alford
Director

GEORGIA STATE CLEARINGHOUSE MEMORANDUM
EXECUTIVE ORDER 12372 REVIEW PROCESS

TO: Nick Germanos
HQ ACC/A7PS
Dept. of the Air Force
129 Andrews Street, Suite 102
Hampton, VA 23665-2769

FROM: Barbara Jackson
Georgia State Clearinghouse

DATE: 5/11/2012

PROJECT: Draft EIS: U.S. Air Force F-35A Operational Basing

STATE ID: GA120409021

The applicant/sponsor indicated that they coordinated directly with the following reviewing agencies: Georgia DOT's Aviation Programs; DNR's Environmental Protection Division; DNR's Wildlife Resources Division; DNR's Historic Preservation Division.

The applicant/sponsor is advised to note additional comments from Coastal RC of Georgia.

Provided that there is continued coordination on this project and any future issues and/or concerns are addressed satisfactorily, the State level review of the above-referenced proposal has been completed, and the proposal found to be consistent with those state or regional goals, policies, plans, fiscal resources, criteria for Developments of Regional Impact (DRI), environmental impacts, federal executive orders, acts and/or rules and regulations with which the state is concerned.

/bj
Enc.: CSRA RC, May 11, 2012
Coastal RC of Georgia, May 4, 2012
Heart of Georgia Altamaha RC, Apr. 27, 2012

Form NCC
Oct. 2008

CENTRAL SAVANNAH RIVER AREA REGIONAL COMMISSION

3023 River Watch Parkway, Suite A
Augusta, GA 30907-2016
(706) 210-2000 • FAX (706) 210-2006
www.csrarc.ga.gov

Counties Served:

Burke

Columbia

Glascock

Hancock

Jefferson

Jenkins

Lincoln

McDuffie

Richmond

Taliaferro

Warren

Washington

Wilkes

DATE: May 8, 2012

TO: Department of the Air Force

FROM: Martin Laws, Regional Planner

SUBJECT: Executive Order 12372 Review

Applicant: Department of Air Force
Project: Environmental Impact Statement
State Clearinghouse ID #: GA120409021
CSRA RC Staff Contact: Martin Laws
Federal Funds Requested: 0
Federal Agency: Department of Air Force

The CSRA Regional Commission has reviewed the Summary Notification for the above-referenced project.

The RC has recommended approval of the project. You should now file your formal application with the appropriate federal agency. A copy of this form must be attached to your formal application.

Comments:

Comments were solicited during this review. No comments were received.

Copy to State Clearinghouse

RECEIVED
MAY 11 2012
GEORGIA
STATE CLEARINGHOUSE

GEORGIA STATE CLEARINGHOUSE MEMORANDUM
EXECUTIVE ORDER 12372 REVIEW PROCESS

TO: Barbara Jackson
Georgia State Clearinghouse
270 Washington Street, SW, Eighth Floor
Atlanta, Georgia 30334

FROM: MR. DAVID DANTZLER
COASTAL RC OF GEORGIA

APPLICANT: Dept. of the Air Force

PROJECT: Draft EIS: U.S. Air Force F-35A Operational Basing

STATE ID: GA120409021

FEDERAL ID:

DATE: May 5, 2012

X This notice is considered to be consistent with those state or regional goals, policies, plans, fiscal resources, criteria for developments of regional impact, environmental impacts, federal executive orders, acts and/or rules and regulations with which this organization is concerned.
Please see attached analysis and comments (1 page).

This notice is not consistent with:

☐ The goals, plans, policies, or fiscal resources with which this organization is concerned. (Line through inappropriate word or words and prepare a statement that explains the rationale for the inconsistency. (Additional pages may be used for outlining the inconsistencies. Be sure to put the GA State ID number on all pages).

☐ The criteria for developments of regional impact, federal executive orders, acts and/or rules and regulations administered by this agency. Negative environmental impacts or provision for protection of the environment should be pointed out. (Additional pages may be used for outlining the inconsistencies). Be sure to put the GA State ID number on all pages).

☐ This notice does not impact upon the activities of the organization.

NOTE: Should you decide to FAX this form (and any attached pages), it is not necessary to mail the originals to us. [770-344-3568]

Form SC-3
Aug. 2010

GEORGIA STATE CLEARINGHOUSE MEMORANDUM
EXECUTIVE ORDER 12372 REVIEW PROCESS

TO: Barbara Jackson
Georgia State Clearinghouse
270 Washington Street, SW, 8th Floor
Atlanta, Georgia 30334

FROM: MS. ROBIN B. NAIL
HEART OF GEORGIA ALTAMAHA RC

RBN

APPLICANT: Department of the Air Force

PROJECT: Draft EIS: U.S. Air Force F-35A Operational Basing

STATE ID: GA120409021

FEDERAL ID:

DATE: 4/27/12

☒ This project is considered to be consistent with those state or regional goals, policies, plans, fiscal resources, criteria for developments of regional impact, environmental impacts, federal executive orders, acts and/or rules and regulations with which this organization is concerned.

This project is not consistent with:

☐ The goals, plans, policies, or fiscal resources with which this organization is concerned. (Line through inappropriate word(s) and prepare a statement that explains the rationale for the inconsistency. (Additional pages may be used for outlining the inconsistencies. Be sure to put the GA State ID no. and any Federal ID no. on all pages).

☐ The criteria for developments of regional impact, federal executive orders, acts and/or rules and regulations administered by your agency. Negative environmental impacts or provision for protection of the environment should be pointed out. (Additional pages may be used for outlining the inconsistencies. Be sure to put the GA State ID no. and any Federal ID no. on all pages).

☐ This project does not impact upon the activities of the organization.

NOTE: Should you decide to FAX this form (and any attached pages), it is not necessary to mail the originals to us. [770-344-3568]

RECEIVED
APR 27 2012
GEORGIA
STATE CLEARINGHOUSE

Form SC-3
Mar. 2012

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive, S.E., Suite 1154, Atlanta, Georgia 30334
Mark Williams, Commissioner
Environmental Protection Division
Judson H. Turner, Director
404/656-2833

May 17, 2012

Mr. Nick Germanos
F-35A EIS Project Manager
HQ-ACC/A7PS
129 Andrews Street
Suite 102 (Rm 337)
Hampton, VA 23665-2769

RE: Comments on the *Draft Environmental Impact Statement (EIS) for F-35A Operational Wing Beddown*, received April 9, 2012

Dear Mr. Germanos:

The Georgia Environmental Protection Division (EPD) has completed its review of the above-referenced document. Thank you for the opportunity to comment. EPD has no comments at this time.

Sincerely,

Jim Ussery, P.E.
Assistant Director

JU:ap
File: F-35A Operational Wing Beddown (NEPA)
S:\RDRIVE\AMY\DoD Unit\NEPA\Air Force\F-35a Beddown EIS.doc

Appendix C


AF-01
F-35
U.S. AIR FORCE
SHAW AIR FORCE BASE
20th Fighter Wing
HQ 9th Air Force

APPENDIX C: NOISE MODELING

INTRODUCTION

Appendix C provides a general noise primer to educate the reader on what constitutes noise, how it is measured, and the studies that were used in support of how and why noise is modeled.

Noise is generally described as unwanted sound. Unwanted sound can be based on objective effects (such as hearing loss or damage to structures) or subjective judgments (community annoyance). Noise analysis thus requires a combination of physical measurement of sound, physical and physiological effects, plus psycho- and socio-acoustic effects.

Section 1.0 of this appendix describes how sound is measured and summarizes noise impacts in terms of community acceptability and land use compatibility. Section 2.0 gives detailed descriptions of the effects of noise that lead to the impact guidelines presented in Section 1.0. Section 3.0 provides a description of the specific methods used to predict aircraft noise, including a detailed description of sonic booms.

C1.0 NOISE DESCRIPTORS AND IMPACT

Aircraft operating in military airspace generate two types of sound. One is "subsonic" noise, which is continuous sound generated by the aircraft's engines and also by air flowing over the aircraft itself. The other is sonic booms (where authorized for supersonic), which are transient impulsive sounds generated during supersonic flight. These are quantified in different ways.

Section 1.1 describes the characteristics which are used to describe sound. Section 1.2 describes the specific noise metrics used for noise impact analysis. Section 1.3 describes how environmental impact and land use compatibility are judged in terms of these quantities.

C1.1 Quantifying Sound

Measurement and perception of sound involve two basic physical characteristics: amplitude and frequency. Amplitude is a measure of the strength of the sound and is directly measured in terms of the pressure of a sound wave. Because sound pressure varies in time, various types of pressure averages are usually used. Frequency, commonly perceived as pitch, is the number of times per second the sound causes air molecules to oscillate. Frequency is measured in units of cycles per second, or hertz (Hz).

Amplitude

The loudest sounds the human ear can comfortably hear have acoustic energy one trillion times the acoustic energy of sounds the ear can barely detect. Because of this vast range, attempts to represent sound amplitude by pressure are generally unwieldy. Sound is, therefore, usually represented on a logarithmic scale with a unit called the decibel (dB). Sound measured on the decibel scale is referred to as a sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Because of the logarithmic nature of the decibel scale, sounds levels do not add and subtract directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

60 dB + 60 dB = 63 dB, and

80 dB + 80 dB = 83 dB.

The total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two. For example:

60.0 dB + 70.0 dB = 70.4 dB.

Because the addition of sound levels behaves differently than that of ordinary numbers, such addition is often referred to as "decibel addition" or "energy addition." The latter term arises from the fact that the combination of decibel values consists of first converting each decibel value to its corresponding acoustic energy, then adding the energies using the normal rules of addition, and finally converting the total energy back to its decibel equivalent.

The difference in dB between two sounds represents the ratio of the amplitudes of those two sounds. Because human senses tend to be proportional (i.e., detect whether one sound is twice as big as another) rather than absolute (i.e., detect whether one sound is a given number of pressure units bigger than another), the decibel scale correlates well with human response.

Under laboratory conditions, differences in sound level of 1 dB can be detected by the human ear. In the community, the smallest change in average noise level that can be detected is about 3 dB. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, and this relation holds true for loud sounds and for quieter sounds. A decrease in sound level of 10 dB actually represents a 90 percent decrease in sound *intensity* but only a 50 percent decrease in perceived *loudness* because of the nonlinear response of the human ear (similar to most human senses).

The one exception to the exclusive use of levels, rather than physical pressure units, to quantify sound is in the case of sonic booms. As described in Section 3.2, sonic booms are coherent waves with specific characteristics. There is a long-standing tradition of describing individual sonic booms by the amplitude of the shock waves, in pounds per square foot (psf). This is particularly relevant when assessing structural effects as opposed to loudness or cumulative community response. In this environmental analysis, sonic booms are quantified by either dB or psf, as appropriate for the particular impact being assessed.

Frequency

The normal human ear can hear frequencies from about 20 Hz to about 20,000 Hz. It is most sensitive to sounds in the 1,000 to 4,000 Hz range. When measuring community response to noise, it is common to adjust the frequency content of the measured sound to correspond to the frequency sensitivity of the human ear. This adjustment is called A-weighting (American National Standards Institute 1988). Sound levels that have been so adjusted are referred to as A-weighted sound levels.

The audible quality of high thrust engines in modern military combat aircraft can be somewhat different than other aircraft, including (at high throttle settings) the characteristic nonlinear crackle of high thrust engines. The spectral characteristics of various noises are accounted for by A-weighting, which approximates the response of the human ear but does not necessarily account for quality. There are other, more detailed, weighting factors that have been applied to sounds. In the 1950s and 1960s, when noise from civilian jet aircraft became an issue, substantial research was performed to determine what characteristics of jet noise were a problem. The metrics Perceived Noise Level and Effective Perceived Noise Level were developed. These accounted for nonlinear behavior of hearing and the importance of low frequencies at high levels, and for many years airport/airbase noise contours were presented in terms of Noise Exposure Forecast, which was based on Perceived Noise Level and Effective Perceived Noise Level. In the 1970s, however, it was realized that the primary intrusive aspect of aircraft noise was the high noise level, a factor which is well represented by A-weighted levels and day-night average sound level (DNL). The refinement of Perceived Noise Level, Effective Perceived Noise Level, and Noise Exposure Forecast was not significant in protecting the public from noise.

There has been continuing research on noise metrics and the importance of sound quality, sponsored by the Department of Defense (DoD) for military aircraft noise and by the Federal Aviation Administration (FAA) for civil aircraft noise. The metric L_{dnmr}, which is described later and accounts for the increased annoyance of rapid onset rate of sound, is a product of this long-term research.

The amplitude of A-weighted sound levels is measured in dB. It is common for some noise analysts to denote the unit of A-weighted sounds by dBA. As long as the use of A-weighting is understood, there is no difference between dB or dBA: it is only important that the use of A-weighting be made clear. In this environmental analysis, A-weighted sound levels are reported as dB.

A-weighting is appropriate for continuous sounds, which are perceived by the ear. Impulsive sounds, such as sonic booms, are perceived by more than just the ear. When experienced indoors, there can be secondary noise from rattling of the building. Vibrations may also be felt. C-weighting (American National Standards Institute 1988) is applied to such sounds. This is a frequency weighting that is relatively flat over the range of human hearing (about 20 Hz to 20,000 Hz) that rolls off above 5,000 Hz and below 50 Hz. In this study, C-weighted sound levels are used for the assessment of sonic booms and other impulsive sounds. As with A-weighting, the unit is dB, but dBC is sometimes used for clarity. In this study, sound levels are reported in both A-weighting and C-weighting dBs, and C-weighted metrics are denoted when used.

Time Averaging

Sound pressure of a continuous sound varies greatly with time, so it is customary to deal with sound levels that represent averages over time. Levels presented as instantaneous (i.e., as might be read from the display of a sound level meter) are based on averages of sound energy over either 1/8 second (fast) or 1 second (slow). The formal definitions of fast and slow levels are somewhat complex, with details that are important to the makers and users of instrumentation. They may, however, be thought of as levels corresponding to the root-mean-square sound pressure measured over the 1/8-second or 1-second periods.

The most common uses of the fast or slow sound level in environmental analysis is in the discussion of the maximum sound level that occurs from the action, and in discussions of typical sound levels. Figure C-1 is a chart of A-weighted sound levels from typical sounds. Some (air conditioner, vacuum cleaner) are continuous sounds whose levels are constant for some time. Some (automobile, heavy truck) are the maximum sound during a vehicle passby. Some (urban daytime, urban nighttime) are averages over some extended period. A variety of noise metrics have been developed to describe noise over different time periods. These are described in Section C1.2.

C1.2 Noise Metrics

C1.2.1 Maximum Sound Level

The highest A-weighted sound level measured during a single event in which the sound level changes value as time goes on (e.g., an aircraft overflight) is called the maximum A-weighted sound level or maximum sound level, for short. It is usually abbreviated by ALM, L_{max}, or L_{Amax}. The maximum sound level is important in judging the interference caused by a noise event with conversation, TV or radio listening, sleeping, or other common activities. Table C-1 reflects L_{max} values for typical aircraft associated with this assessment operating at the indicated flight profiles and power settings. For comparison purposes, normal conversation (at a distance of 3 feet) is approximately 60 dB, loud speech is approximately 70 dB, and the sound of a train approaching a subway platform is approximately 90 dB. At approximately 120 dB, sound can be intense enough to induce pain, while at 130 dB, immediate and permanent hearing damage can result (National Park Service [NPS] 1997).

Table C-1. Representative Instantaneous Maximum Sound Levels (L_{max})*							
Aircraft (engine type)	*Power Setting*	*Power Unit*	*L_{max} (in dBA) At Varying Altitudes (In Feet)*				
			500	*1,000*	*2,000*	*5,000*	*10,000*
Takeoff/Departure Operations							
A-10A	6200	NF	100	92	82	68	58
B-1[1]	97.5%	RPM	127	118	110	98	89
F-4C	98%	RPM	116	108	100	87	76
F-15 (P220)	90%	NC	111	104	97	85	75
F-16 (P229)	93%	NC	114	106	98	86	76
F-22	100%	ETR	120	112	105	93	83
F-35A	100%	ETR	124	115	106	94	83
Landing/Arrival Operations[2]							
A-10A	5225	NF	97	89	79	60	46
B-1	90%	RPM	99	92	85	73	62
F-4C	82.5%	RPM	102	96	88	76	66
F-15 (P220)	75%	NC	89	82	74	63	53
F-16 (P229)	83.5%	NC	93	86	78	66	56
F-22	43%	ETR	111	104	96	84	73
F-35A	40%	ETR	102	95	87	76	66

Source: NOISEMAP OPX file using standard weather conditions of 59 degrees Fahrenheit and 70 percent relative humidity

Notes: *Power settings indicated may not be comparable across aircraft, that all numbers are rounded, and power settings are typical but not constant for departure/arrival operations. RPM—Revolutions Per Minute; ETR—Engine Thrust Request; NC—Engine Core RPM; and NF—Engine Fan RPM.

[1]B-1 Takeoff/Departure modeled with Afterburner, all other departure aircraft modeled without afterburner (if available).

[2]All Landing/Arrival aircraft modeled with "parallel-interpolation" power setting for gear down configuration (except if noted).

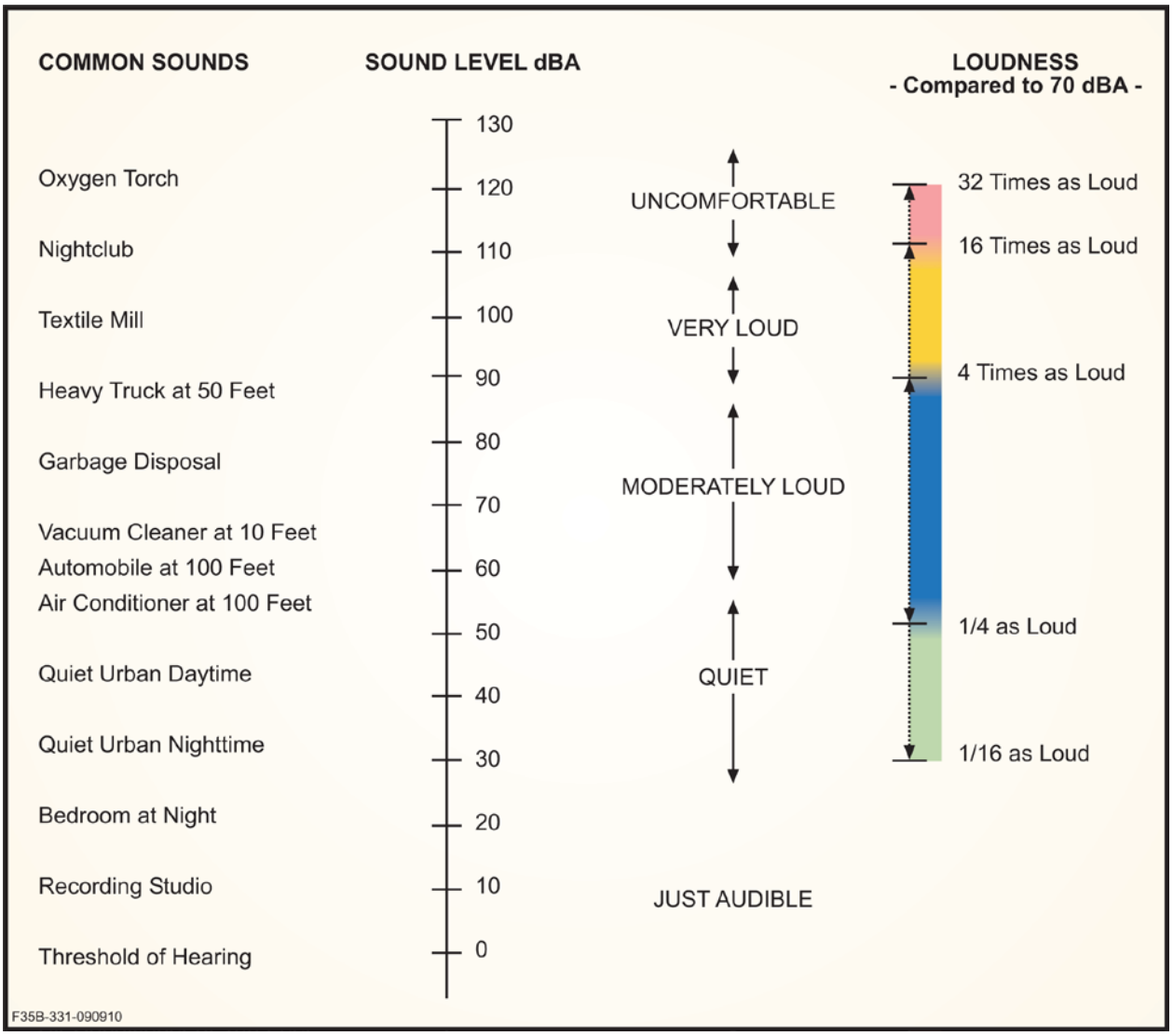


Figure C-1. Typical A-Weighted Sound Levels of Common Sounds

Source: Derived from the *Handbook of Noise Control,* Harris 1979, FICAN 1997

C1.2.2 Peak Sound Level

For impulsive sounds, the true instantaneous sound pressure is of interest. For sonic booms, this is the peak pressure of the shock wave, as described in Section 3.2 of this appendix. This pressure is usually presented in physical units of pounds per square foot. Sometimes it is represented on the decibel scale, with symbol Lpk. Peak sound levels do not use either A or C weighting.

C1.2.3 Sound Exposure Level

Individual time-varying noise events have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. Although the maximum sound level, described above, provides some measure of the intrusiveness of the event, it alone does not completely describe the total event. The period of time during which the sound is heard is also

significant. The Sound Exposure Level (abbreviated SEL or L_{AE} for A-weighted sounds) combines both of these characteristics into a single metric.

SEL is a composite metric that represents both the intensity of a sound and its duration. Mathematically, the mean square sound pressure is computed over the duration of the event, then multiplied by the duration in seconds, and the resultant product is turned into a sound level. It does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event. It has been well established in the scientific community that SEL measures this impact much more reliably than just the maximum sound level. Table C-2 shows SEL values corresponding to the aircraft and power settings reflected in Table C-1.

Table C-2. Representative Sound Exposure Levels (SEL)*

Aircraft (engine type)	*Power Setting*	*Power Unit*	*SEL (in dBA) At Varying Altitudes (In Feet)*				
			500	*1,000*	*2,000*	*5,000*	*10,000*
Takeoff/Departure Operations[2]							
A-10A	6200	NF	103	96	89	77	68
B-1[1]	97.5%	RPM	130	123	117	107	99
F-4C	98%	RPM	120	114	107	97	87
F-15 (P220)	90%	NC	117	112	106	97	88
F-16 (P229)	93%	NC	117	111	105	95	86
F-22	100%	ETR	124	119	113	103	95
F-35A	100%	ETR	125	118	111	101	92
Landing/Arrival Operation[3]							
A-10A	5225	NF	98	92	83	67	55
B-1	90%	RPM	103	98	93	83	74
F-4C	82.5%	RPM	107	102	96	87	79
F-15 (P220)	75%	NC	94	89	84	75	67
F-16 (P229)	83.5%	NC	97	92	86	77	68
F-22	43%	ETR	115	109	103	94	85
F-35A	40%	ETR	105	100	94	85	77

Source: NOISEMAP OPX file using standard weather conditions of 59 degrees Fahrenheit and 70 percent relative humidity.

Notes: *Power settings indicated may not be comparable across aircraft, that all numbers are rounded, and power settings are typical but not constant for departure/arrival operations. RPM—Revolutions Per Minute; ETR—Engine Thrust Request; NC—Engine Core RPM; and NF—Engine Fan RPM.

[1]B-1 Takeoff/Departure modeled with Afterburner, all other departure aircraft modeled without afterburner (if available).

[2]Takeoff/Departure modeled at 160 knots airspeed for SEL purposes.

[3]All Landing/Arrival aircraft modeled at 160 knots airspeed for SEL purposes.

Because the SEL and the maximum sound level are both used to describe single events, there is sometimes confusion between the two, so the specific metric used should be clearly stated.

SEL can be computed for C-weighted levels (appropriate for impulsive sounds), and the results denoted CSEL or L_{CE}. SEL for A-weighted sound is sometimes denoted ASEL. Within this study, SEL is used for A-weighted sounds and CSEL for C-weighted.

C1.2.4 Equivalent Sound Level

For longer periods of time, total sound is represented by the equivalent continuous sound pressure level (L_{eq}). L_{eq} is the average sound level over some time period (often an hour or a day, but any explicit time

span can be specified), with the averaging being done on the same energy basis as used for SEL. SEL and L_{eq} are closely related, with L_{eq} being SEL over some time period normalized by that time.

Just as SEL has proven to be a good measure of the noise impact of a single event, L_{eq} has been established to be a good measure of the impact of a series of events during a given time period. Also, while Leq is defined as an average, it is effectively a sum over that time period and is, thus, a measure of the cumulative impact of noise.

C1.2.5 Day-Night Average Sound Level

Noise tends to be more intrusive at night than during the day. This effect is accounted for by applying a 10 dB penalty to events that occur after 10 pm and before 7 am. If L_{eq} is computed over a 24-hour period with this nighttime penalty applied, the result is the DNL. DNL is the community noise metric recommended by the USEPA (United States Environmental Protection Agency [USEPA] 1974) and has been adopted by most federal agencies (Federal Interagency Committee on Noise 1992). It has been well established that DNL correlates well with long-term community response to noise (Schultz 1978, Finegold *et al.* 1994). This correlation is presented in Section 1.3 of this appendix.

DNL accounts for the total, or cumulative, noise impact at a given location, and for this reason is often referred to as a "cumulative" metric. It was noted earlier that, for impulsive sounds, such as sonic booms, C-weighting is more appropriate than A-weighting. The day-night average sound level computed with C-weighting is denoted CDNL or L_{Cdn}. This procedure has been standardized, and impact interpretive criteria similar to those for DNL have been developed (Committee on Hearing, Bioacoustics and Biomechanics 1981).

C1.2.6 Onset-Adjusted Monthly Day-Night Average Sound Level

Aircraft operations in military training airspace generate a noise environment somewhat different from other community noise environments. Overflights are sporadic, occurring at random times and varying from day to day and week to week. This situation differs from most community noise environments, in which noise tends to be continuous or patterned. Individual military overflight events also differ from typical community noise events in that noise from a low-altitude, high-airspeed flyover can have a rather sudden onset.

To represent these differences, the conventional DNL metric is adjusted to account for the "surprise" effect of the sudden onset of aircraft noise events on humans (Plotkin *et al.* 1987; Stusnick *et al.* 1992, 1993). For aircraft exhibiting a rate of increase in sound level (called onset rate) of from 15 to 150 dB per second, an adjustment or penalty ranging from 0 to 11 dB is added to the normal SEL. Onset rates above 150 dB per second require an 11 dB penalty, while onset rates below 15 dB per second require no adjustment. The DNL is then determined in the same manner as for conventional aircraft noise events and is designated as Onset-Rate Adjusted Day-Night Average Sound Level (abbreviated L_{dnmr}).

Because of the irregular occurrences of aircraft operations, the number of average daily operations is determined by using the calendar month with the highest number of operations. The monthly average

is denoted L_{dnmr}. Noise levels are calculated the same way for both DNL and L_{dnmr}. L_{dnmr} is interpreted by the same criteria as used for DNL.

C1.2.7 Number-of-Events Above a Threshold Level

The Number-of-events Above metric (NA) provides the total number of noise events that exceed the selected noise level threshold during a specified period of time. Combined with the selected threshold level (L), the NA metric is symbolized as NAL. The threshold L can be defined in terms of either the SEL or L_{max} metric, and it is important that this selection is reflected in the nomenclature. When labeling a contour line or point of interest (POI) on a map the NAL will be followed by the number of events in parentheses for that line or POI. For example, the noise environment at a location where 10 events exceed an SEL of 90 dB, over a given period of time, would be represented by the nomenclature NA90SEL (10). Similarly, for L_{max} it would be NA90L_{max} (10). The period of time can be an average 24-hour day, daytime, nighttime, school day, or any other time period appropriate to the nature and application of the analysis.

NA can be portrayed for single or multiple locations, or by means of noise contours on a map similar to the common DNL contours. A threshold level is selected that best meets the need for that situation. An L_{max} threshold is normally selected to analyze speech interference, whereas an SEL threshold is normally selected for analysis of sleep disturbance. The NA metric is the only supplemental metric that has been developed that combines single-event noise levels with the number of aircraft operations. In essence, it answers the question of how many aircraft (or range of aircraft) fly over a given location or area at or above a selected threshold noise level.

C1.2.8 Time Above a Specified Level

The Time Above (TA) metric is a measure of the total time that the A-weighted aircraft noise level is at or above a defined sound level threshold. Combined with the selected threshold level (L), the TA metric is symbolized as TAL. TA is not a sound level, but rather a time expressed in minutes. TA values can be calculated over a full 24-hour annual average day, the 15-hour daytime and 9-hour nighttime periods, a school day, or any other time period of interest, provided there is operational data to define the time period of interest. TA has application for describing the noise environment in schools, particularly when comparing the classroom or other noise sensitive environments for different operational scenarios. TA can be portrayed by means of noise contours on a map similar to the common DNL contours.

The TA metric is a useful descriptor of the noise impact of an individual event or for many events occurring over a certain time period. When computed for a full day, the TA can be compared alongside the DNL in order to determine the sound levels and total duration of events that contribute to the DNL. TA analysis is usually conducted along with NA analysis so the results show not only how many events occur above the selected threshold(s), but also the total duration of those events above those levels for the selected time period.

C1.3 Noise Impact

C1.3.1 Community Reaction

Studies of long-term community annoyance to numerous types of environmental noise show that DNL correlates well with the annoyance. Schultz (1978) showed a consistent relationship between DNL and annoyance. Shultz's original curve fit (Figure C-2) shows that there is a remarkable consistency in results of attitudinal surveys which relate the percentages of groups of people who express various degrees of annoyance when exposed to different DNL.

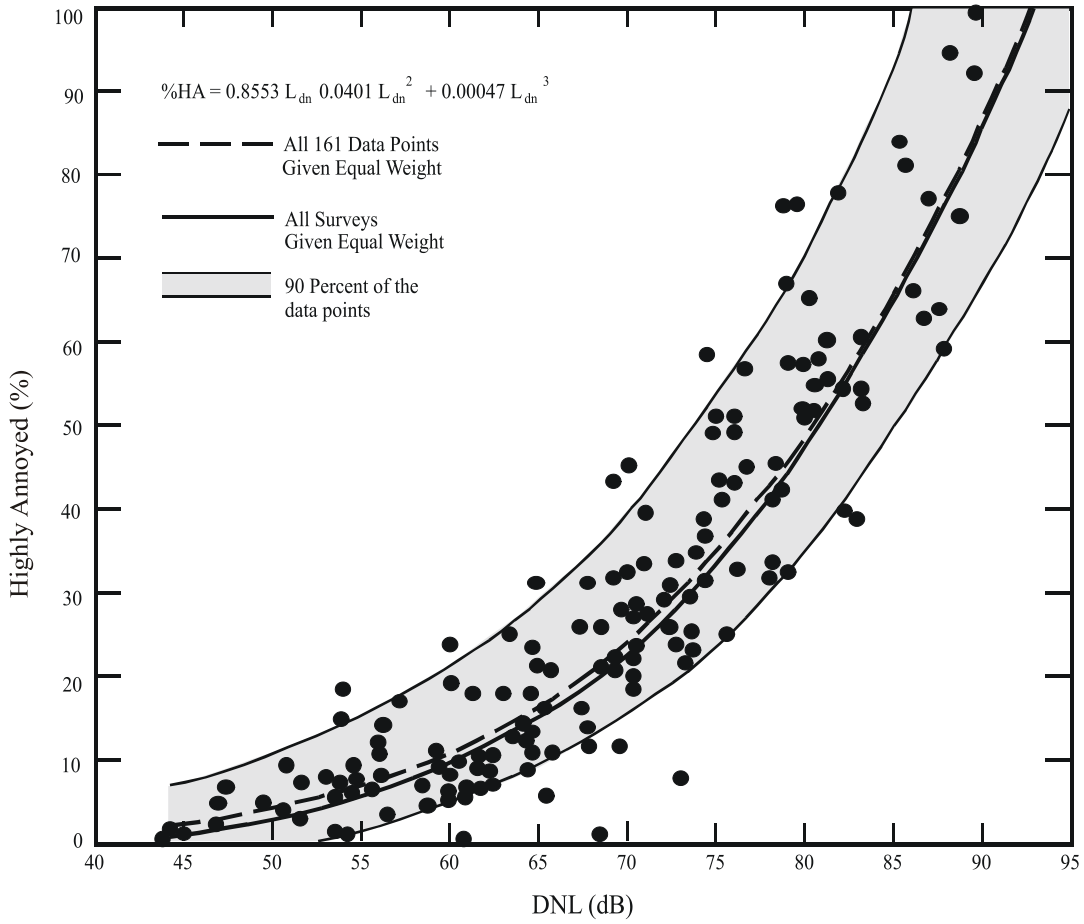
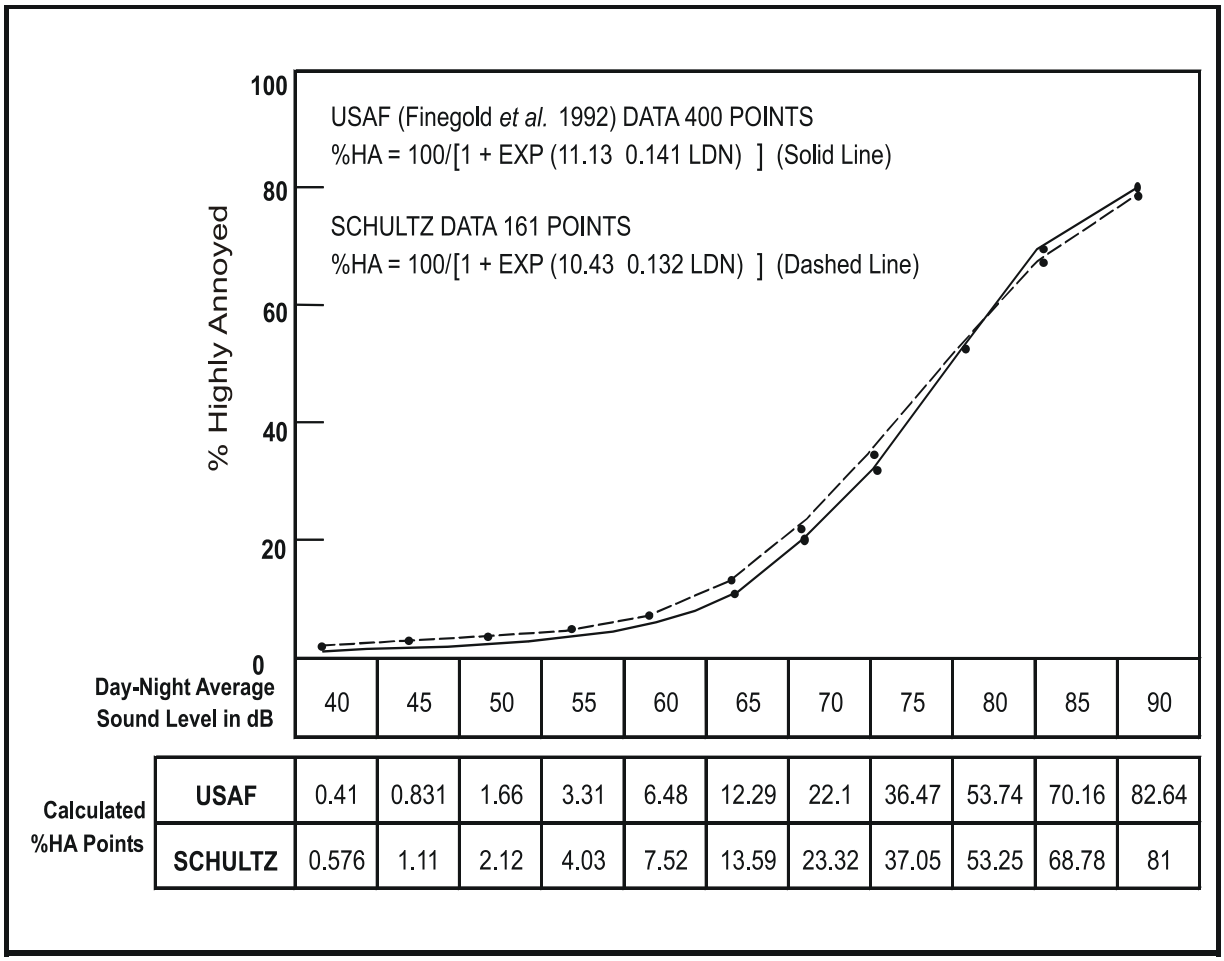


Figure C-2. Community Surveys of Noise Annoyance
Source: Schultz 1978

Another study reaffirmed this relationship (Fidell *et al.* 1991). Figure C-3 (Federal Interagency Committee on Noise 1992) shows an updated form of the curve fit (Finegold *et al.* 1994) in comparison with the original. The updated fit, which does not differ substantially from the original, is the current preferred form. In general, correlation coefficients of 0.85 to 0.95 are found between the percentages of groups of people highly annoyed and the level of average noise exposure. The correlation coefficients for the annoyance of individuals are relatively low, however, on the order of 0.5 or less. This is not surprising, considering the varying personal factors that influence the manner in which individuals react

to noise. Nevertheless, findings substantiate that community annoyance to aircraft noise is represented quite reliably using DNL.



Day-Night Average Sound Level in dB	40	45	50	55	60	65	70	75	80	85	90
Calculated %HA Points: USAF	0.41	0.831	1.66	3.31	6.48	12.29	22.1	36.47	53.74	70.16	82.64
Calculated %HA Points: SCHULTZ	0.576	1.11	2.12	4.03	7.52	13.59	23.32	37.05	53.25	68.78	81

Figure C-3. Response of Communities to Noise; Comparison of Original (Schultz 1978) and Current (Finegold *et al*. 1994) Curve Fits

As noted earlier for SEL, DNL does not represent the sound level heard at any particular time, but rather represents the total sound exposure. DNL accounts for the sound level of individual noise events, the duration of those events, and the number of events. Its use is endorsed by the scientific community (American National Standards Institute 1980, 1988, 2005; USEPA 1974; Federal Interagency Committee on Urban Noise 1980; Federal Interagency Committee on Noise 1992).

While DNL is the best metric for quantitatively assessing cumulative noise impact, it does not lend itself to intuitive interpretation by non-experts. Accordingly, it is common for environmental noise analyses to include other metrics for illustrative purposes. A general indication of the noise environment can be presented by noting the maximum sound levels which can occur and the number of times per day noise events will be loud enough to be heard. Use of other metrics as supplements to DNL has been endorsed by federal agencies (Federal Interagency Committee on Noise 1992).

The Schultz curve is generally applied to annual average DNL. In Section C1.2, L_{dnmr} was described and presented as being appropriate for quantifying noise in military airspace. The Schultz curve is used with L_{dnmr} as the noise metric. L_{dnmr} is always equal to or greater than DNL, so impact is generally higher than would have been predicted if the onset rate and busiest-month adjustments were not accounted for.

There are several points of interest in the noise-annoyance relation. The first is DNL of 65 dB. This is a level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like aviation which do cause noise. Areas exposed to DNL above 65 dB are generally not considered suitable for residential use. The second is DNL of 55 dB, which was identified by USEPA as a level "...requisite to protect the public health and welfare with an adequate margin of safety," (USEPA 1974) which is essentially a level below which adverse impact is not expected. The third is DNL of 75 dB. This is the lowest level at which adverse health effects could be credible (USEPA 1974). The very high annoyance levels correlated with DNL of 75 dB make such areas unsuitable for residential land use.

Sonic boom exposure is measured by C-weighting, with the corresponding cumulative metric being CDNL. Correlation between CDNL and annoyance has been established, based on community reaction to impulsive sounds (Committee on Hearing, Bioacoustics and Biomechanics 1981). Values of the C-weighted equivalent to the Schultz curve are different than that of the Schultz curve itself. Table C-3 shows the relation between annoyance, DNL, and CDNL.

Table C-3. Relation Between Annoyance, DNL and CDNL

DNL	*% Highly Annoyed*	*CDNL*
45	0.83	42
50	1.66	46
55	3.31	51
60	6.48	56
65	12.29	60
70	22.10	65

Interpretation of CDNL from impulsive noise is accomplished by using the CDNL versus annoyance values in Table C-3. CDNL can be interpreted in terms of an "equivalent annoyance" DNL. For example, CDNL of 52, 61, and 69 dB are equivalent to DNL of 55, 65, and 75 dB, respectively. If both continuous and impulsive noise occurs in the same area, impacts are assessed separately for each.

C1.3.2 Land Use Compatibility

As noted above, the inherent variability between individuals makes it impossible to predict accurately how any individual will react to a given noise event. Nevertheless, when a community is considered as a whole, its overall reaction to noise can be represented with a high degree of confidence. As described above, the best noise exposure metric for this correlation is the DNL or L_{dnmr} for military overflights. Impulsive noise can be assessed by relating CDNL to an "equivalent annoyance" DNL, as outlined in Section C1.3.1.

In June 1980, an ad hoc Federal Interagency Committee on Urban Noise published guidelines (Federal Interagency Committee on Urban Noise 1980) relating DNL to compatible land uses. This committee

was composed of representatives from DoD, Transportation, and Housing and Urban Development; USEPA; and the Veterans Administration. Since the issuance of these guidelines, federal agencies have generally adopted these guidelines for their noise analyses.

Following the lead of the committee, the DoD and FAA adopted the concept of land-use compatibility as the accepted measure of aircraft noise effect. Air Force guidelines are reprinted in Table C-4, along with the explanatory notes included in the regulation. These guidelines are not mandatory (note the footnote "*" in the table), rather they are recommendations to provide the best means for determining noise impact for communities adjacent to bases. For commercial airports, the FAA has adopted similar guidelines (as set forth in FAR Part 150 regulations) and these are presented in Table C-5. Again, these are recommendations only; it is up to the city/county zoning and planning entities to determine what land uses are compatible and how they will deal with incompatibilities (e.g., what type of development is allowed, instituting residential buyouts, or whether noise attenuation efforts will be done in residential units). In general, residential land uses normally are not compatible with outdoor DNL values above 65 dB, and the extent of land areas and populations exposed to DNL of 65 dB and higher provides the best means for assessing the noise impacts of alternative aircraft actions.

Table C-4. Air Force Land Use Compatibility and Noise Exposure

Land Use		Noise Levels (dB)			
SLUCM No.	**Name**	***65-69***	***70-74***	***75-79***	***>80***
10	**Residential**				
11.11	Single units; detached	A[1]	B[1]	N	N
11.12	Single units; semidetached	A[1]	B[1]	N	N
11.13	Singe units; attached row	A[1]	B[1]	N	N
11.21	Two units; side-by-side	A[1]	B[1]	N	N
11.22	Two units; one above the other	A[1]	B[1]	N	N
11.31	Apartments; walk up	A[1]	B[1]	N	N
11.32	Apartments; elevator	A[1]	B[1]	N	N
12	Group quarters	A[1]	B[1]	N	N
13	Residential hotels	A[1]	B[1]	N	N
14	Mobile home parks or courts	N	N	N	N
15	Transient lodgings	A[1]	B[1]	C[1]	N
16	Other residential	A[1]	B[1]	N	N
20	**Manufacturing**				
21	Food and kindred products; manufacturing	Y	Y[2]	Y[3]	Y[4]
22	Textile mill products; manufacturing	Y	Y[2]	Y[3]	Y[4]
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	Y	Y[2]	Y[3]	Y[4]
24	Lumber and wood products (except furniture); manufacturing	Y	Y[2]	Y[3]	Y[4]
25	Furniture and fixtures; manufacturing	Y	Y[2]	Y[3]	Y[4]
26	Paper and allied products; manufacturing	Y	Y[2]	Y[3]	Y[4]
27	Printing, publishing, and allied industries	Y	Y[2]	Y[3]	Y[4]
28	Chemicals and allied products; manufacturing	Y	Y[2]	Y[3]	Y[4]
29	Petroleum refining and related industries	Y	Y[2]	Y[3]	Y[4]
30	**Manufacturing**				
31	Rubber and misc. plastic products, manufacturing	Y	Y[2]	Y[3]	Y[4]
32	Stone, clay and glass products; manufacturing	Y	Y[2]	Y[3]	Y[4]
33	Primary metal industries	Y	Y[2]	Y[3]	Y[4]
34	Fabricated metal products; manufacturing	Y	Y[2]	Y[3]	Y[4]
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks; manufacturing	Y	A	B	N

Table C-4. Air Force Land Use Compatibility and Noise Exposure					
Land Use		Noise Levels (dB)			
SLUCM No.	Name	*65-69*	*70-74*	*75-79*	*>80*
39	Miscellaneous manufacturing	Y	Y[2]	Y[3]	Y[4]
40	**Transportation, communications, and utilities**				
41	Railroad, rapid rail transit, and street railroad transportation	Y	Y[1]	Y[3]	Y[4]
42	Motor vehicle transportation	Y	Y[2]	Y[3]	Y[4]
43	Aircraft transportation	Y	Y[2]	Y[3]	Y[4]
44	Marine craft transportation	Y	Y[2]	Y[3]	Y[4]
45	Highway and street right-of-way	Y	Y[2]	Y[3]	Y[4]
46	Automobile parking	Y	Y[2]	Y[3]	Y[4]
47	Communications	Y	A[5]	B[5]	N
48	Utilities	Y	Y	Y[2]	Y[3]
49	Other transportation communications and utilities	Y	A[5]	B[5]	N
50	**Trade**				
51	Wholesale trade	Y	Y[2]	Y[3]	Y[4]
52	Retail trade-building materials, hardware and farm equipment	Y	Y[2]	Y[3]	Y[4]
53	Retail trade-general merchandise	Y	A	B	N
54	Retail trade-food	Y	A	B	N
55	Retail trade-automotive, marine craft, aircraft and accessories	Y	A	B	N
56	Retail trade-apparel and accessories	Y	A	B	N
57	Retail trade-furniture, home furnishings and equipment	Y	A	B	N
58	Retail trade-eating and drinking establishments	Y	A	B	N
59	Other retail trade	Y	A	B	N
60	**Services**				
61	Finance, insurance, and real estate services	Y	A	B	N
62	Personal services	Y	A	B	N
62.4	Cemeteries	Y	Y[2]	Y[3]	Y[4]
63	Business services	Y	A	B	N
64	Repair services	Y	Y[2]	Y[3]	Y[4]
65	Professional services	Y	A	B	N
65.1	Hospitals, nursing homes	A*	B*	N	N
65.1	Other medical facilities	Y	A	B	N
66	Contract construction services	Y	A	B	N
67	Governmental services	Y*	A*	B*	N
68	Educational services	A*	B*	N	N
69	Miscellaneous services	Y	A	B	N
70	**Cultural, entertainment and recreational**				
71	Cultural activities (including churches)	A*	B*	N	N
71.2	Nature exhibits	Y*	N	N	N
72	Public assembly	Y	N	N	N
72.1	Auditoriums, concert halls	A	B	N	N
72.11	Outdoor music shell, amphitheaters	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y[7]	Y[7]	N	N
73	Amusements	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	Y*	A*	B*	N
75	Resorts and group camps	Y*	Y*	N	N
76	Parks	Y*	Y*	N	N
79	Other cultural, entertainment, and recreation	Y*	Y*	N	N
80	**Resources production and extraction**				
81	Agriculture (except livestock)	Y[8]	Y[9]	Y[10]	Y[10, 11]
81.5 to 81.7	Livestock farming and animal breeding	Y[8]	Y[9]	Y[10]	Y[10, 11]
82	Agricultural related activities	Y[8]	Y[9]	N	N
83	Forestry activities and related services	Y[8]	Y[9]	Y[10]	Y[10, 11]

Table C-4. Air Force Land Use Compatibility and Noise Exposure					
Land Use		Noise Levels (dB)			
SLUCM No.	Name	*65-69*	*70-74*	*75-79*	*>80*
84	Fishing activities and related services	Y	Y	Y	Y
85	Mining activities and related services	Y	Y	Y	Y
89	Other resources production and extraction	Y	Y	Y	Y

Legend:

SLUCM = Standard Land Use Coding Manual, U.S. Department of Transportation

Y = Yes; land use and related structures are compatible without restriction.

N = No; land use and related structures are not compatible and should be prohibited.

A, B, or C = Land use and related structures generally compatible; measures to achieve Noise Level Reduction of A (25 db), B (30 db), or C (35 db) should be incorporated into the design and construction of structures.

A*, B*, or C* = Land use generally compatible with Noise Level Reduction. However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. See appropriate footnotes.

* = The designation of these uses as "compatible" in this zone reflects individual federal agency and program consideration of general cost and feasibility factors, as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

Notes:

[1a]Although local conditions may require residential use, it is discouraged in DNL 65-69 dB and strongly discouraged in DNL 70-74 dB. An evaluation should be conducted prior to approvals, indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones, and that there are no viable alternative locations.

[1b]Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor NLR for DNL 65-69 dB and DNL 70-74 dB should be incorporated into building codes and considered in individual approvals.

[1c]NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.

[2]Measures to achieve the same NLR as required for facilities in the DNL 65-69 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

[3]Measures to achieve the same NLR as required for facilities in the DNL 70-74 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

[4]Measures to achieve the same NLR as required for facilities in the DNL 75-79 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

[5]If noise sensitive, use indicated NLR; if not, the use is compatible.

[6]No buildings.

[7]Land use is compatible provided special sound reinforcement systems are installed.

[8]Residential buildings require the same NLR required for facilities in the DNL 65-69 dB range.

[9]Residential buildings require the same NLR required for facilities in the DNL 70-74 dB range.

[10]Residential buildings are not permitted.

[11]Land use is not recommended. If the community decides the use is necessary, hearing protection devices should be worn by personnel.

Table C-5. FAR Part 150 Noise and Land Use Compatibility						
Land Use	Noise Levels (dB)					
	<65	*65-70*	*70-75*	*75-80*	*80-85*	*>85*
Residential Use						
Residential other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
Public Use						
Schools	Y	N[1]	N[1]	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	Y[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade—general	Y	Y	Y[2]	Y[3]	Y[4]	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N

Table C-5. FAR Part 150 Noise and Land Use Compatibility						
Land Use	**Noise Levels (dB)**					
	<65	***65-70***	***70-75***	***75-80***	***80-85***	***>85***
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y[5]	Y[5]	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Source: FAR Part 150, Appendix A, Table 1.

Key:

Y (Yes): Land use and related structures compatible without restrictions.

N (No): Land use and related structures are not compatible and should be prohibited.

NLR: Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35: Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes:

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

[1]Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

[2]Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

[3]Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

[4]Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.

[5]Land use compatible provided special sound reinforcement systems are installed.

[6]Residential buildings require an NLR of 25.

[7]Residential buildings require an NLR of 30.

[8]Residential buildings not permitted.

In some cases a change in noise level, rather than an absolute threshold, may be a more appropriate measure of impact.

C2.0 NOISE EFFECTS

The discussion in Section C1.3 presented the global effect of noise on communities. The following sections describe particular noise effects. These effects include non-auditory health effects, annoyance, speech interference, sleep disturbance, noise-induced hearing impairment, noise effects on animals and wildlife, effects on property values, noise effects on structures, terrain, and cultural resources.

C2.1 Nonauditory Health Effects

Nonauditory health effects of long-term noise exposure, where noise may act as a risk factor, have not been found to occur at levels below those protective against noise-induced hearing loss, described above. Most studies attempting to clarify such health effects have found that noise exposure levels established for hearing protection will also protect against any potential nonauditory health effects, at least in workplace conditions. The best scientific summary of these findings is contained in the lead paper at the National Institutes of Health Conference on Noise and Hearing Loss, held on January 22–24, 1990, in Washington, D.C., which states "The nonauditory effects of chronic noise exposure, when noise is suspected to act as one of the risk factors in the development of hypertension, cardiovascular disease, and other nervous disorders, have never been proven to occur as chronic manifestations at levels below these criteria (an average of 75 dBA for complete protection against hearing loss for an eight-hour day)" (von Gierke 1990; parenthetical wording added for clarification). At the International Congress (1988) on Noise as a Public Health Problem, most studies attempting to clarify such health effects did not find them at levels below the criteria protective of noise-induced hearing loss; and even above these criteria, results regarding such health effects were ambiguous.

Consequently, it can be concluded that establishing and enforcing exposure levels protecting against noise-induced hearing loss would not only solve the noise-induced hearing loss problem but also any potential nonauditory health effects in the work place.

Although these findings were directed specifically at noise effects in the work place, they are equally applicable to aircraft noise effects in the community environment. Research studies regarding the nonauditory health effects of aircraft noise are ambiguous, at best, and often contradictory. Yet, even those studies which purport to find such health effects use time-average noise levels of 75 dB and higher for their research.

For example, in an often-quoted paper, two University of California at Los Angeles researchers found a relation between aircraft noise levels under the approach path to Los Angeles International Airport and increased mortality rates among the exposed residents by using an average noise exposure level greater than 75 dB for the "noise-exposed" population (Meecham and Shaw 1979). Nevertheless, three other University of California at Los Angeles professors analyzed those same data and found no relation between noise exposure and mortality rates (Frerichs *et al*. 1980).

As a second example, two other University of California at Los Angeles researchers used this same population near Los Angeles International Airport to show a higher rate of birth defects during the period of 1970 to 1972 when compared with a control group residing away from the airport (Jones and Tauscher 1978). Based on this report, a separate group at the United States Centers for Disease Control performed a more thorough study of populations near Atlanta's Hartsfield International Airport for 1970 to 1972 and found no relation in their study of 17 identified categories of birth defects to aircraft noise levels above 65 dB (Edmonds *et al.* 1979).

In a review of health effects, prepared by a Committee of the Health Council of The Netherlands (Committee of the Health Council of the Netherlands 1996) analyzed currently available published

information on this topic. The committee concluded that the threshold for possible long-term health effects was a 16-hour (6:00 a.m. to 10:00 p.m.) L_{eq} of 70 dB. Projecting this to 24 hours and applying the 10 dB nighttime penalty used with DNL, this corresponds to DNL of about 75 dB. The study also affirmed the risk threshold for hearing loss, as discussed earlier.

In summary, there is no scientific basis for a claim that potential health effects exist for aircraft time-average sound levels below 75 dB.

C2.2 Annoyance

The primary effect of aircraft noise on exposed communities is one of annoyance. Noise annoyance is defined by the USEPA as any negative subjective reaction on the part of an individual or group (USEPA 1974). As noted in the discussion of DNL above, community annoyance is best measured by that metric.

Because the USEPA Levels Document (USEPA 1974) identified DNL of 55 dB as ". . . requisite to protect public health and welfare with an adequate margin of safety," it is commonly assumed that 55 dB should be adopted as a criterion for community noise analysis. From a noise exposure perspective, that would be an ideal selection. However, financial and technical resources are generally not available to achieve that goal. Most agencies have identified DNL of 65 dB as a criterion which protects those most impacted by noise, and which can often be achieved on a practical basis (Federal Interagency Committee on Noise 1992). This corresponds to about 12 percent of the exposed population being highly annoyed.

Although DNL of 65 dB is widely used as a benchmark for significant noise impact, and is often an acceptable compromise, it is not a statutory limit, and it is appropriate to consider other thresholds in particular cases.

In this analysis, no specific threshold is used. The noise in the affected environment is evaluated on the basis of the information presented in this appendix and in the body of the environmental analysis.

Community annoyance from sonic booms is based on CDNL, as discussed in Section 1.3. These effects are implicitly included in the "equivalent annoyance" CDNL values in Table C-3, since those were developed from actual community noise impact.

C2.3 Speech Interference

Speech interference associated with aircraft noise is a primary cause of annoyance to individuals on the ground. The disruption of routine activities in the home, such as radio or television listening, telephone use, or family conversation, gives rise to frustration and irritation. The quality of speech communication is also important in classrooms, offices, and industrial settings and can cause fatigue and vocal strain in those who attempt to communicate over the noise. Research has shown that the use of the SEL metric will measure speech interference successfully, and that a SEL exceeding 65 dB will begin to interfere with speech communication.

Classroom Criteria

For listeners with normal hearing and fluency in the language, complete sentence intelligibility can be achieved when the signal-to-noise ratio (i.e., the difference between the speech level and the level of the interfering noise) is in the range 15 to 18 dB (Lazarus 1990). Both the American National Standard Institute (ANSI) and the American Speech-Language-Hearing Association (ASLHA) recommend at least a 15-dB signal-to-noise ratio in classrooms, to ensure that children with hearing impairments and language disabilities are able to enjoy high speech intelligibility (ANSI 2002, AHSLA 1995). As such, provided that the average adult male or female voice registers a minimum of 50 dB L_{max} in the rear of the classroom, the ANSI standard requires that the continuous background noise level indoors must not exceed a L_{eq} of 35 dB (assumed to apply for the duration of school hours). The World Health Organization (WHO) reported for a speaker-to-listener distance of about 1 meter, empirical observations have shown that speech in relaxed conversations is 100 percent intelligible in background noise levels of about 35 dB, and speech can be fairly well understood in the presence of background levels of 45 dB. The WHO recommends a guideline value of 35 dB L_{eq} for continuous background levels in classrooms during school hours (WHO 2000). Bradley suggests that in smaller rooms, where speech levels in the rear of the classroom are approximately 50 dB L_{max}, steady-state noise levels above 35 dB L_{eq} may interfere with the intelligibility of speech (Bradley 1993).

For the purposes of determining eligibility for noise insulation funding, the Federal Aviation Administration (FAA) guidelines state that the design objective for a classroom environment is 45 dB L_{eq} resulting from aircraft operations during normal school hours (FAA 1985). However, most aircraft noise is not continuous and consists of individual events where the sound level exceeds the background level for a limited time period as the aircraft flies over. Since speech interference in the presence of aircraft noise is essentially determined by the magnitude and frequency of individual aircraft flyover events, a time-averaged metric alone, such as L_{eq}, is not necessarily appropriate when evaluating the overall effects. In addition to the background level criteria described above, single-event criteria, which account for those sporadic intermittent outdoor noisy events, are also essential to specifying speech interference criteria.

In 1984, a report to the Port Authority of New York and New Jersey recommended utilizing the Speech Interference Level (SIL) metric for classroom noise criteria (Sharp and Plotkin 1984). This metric is based on the maximum sound levels in the frequency range (approximately 500 Hz to 2,000 Hz) that directly affects speech communication. The study identified an SIL (the average of the sound levels in the 500, 1000, and 2000 Hz octave-bands) of 45 dB as the desirable goal, which was estimated to provide 90 percent word intelligibility for the short time periods during aircraft over-flights. Although early classroom level criteria were defined in terms of SIL, the use and measurement of L_{max} as the primary metric has since become more popular. Both metrics take into consideration the L_{max} associated with intermittent noise events and can be related to existing background levels when determining speech interference percentages. An SIL of 45 dB is approximately equivalent to an A-weighted L_{max} of 50 dB for aircraft noise (Wesler 1986).

In 1998, a report also concluded that if an aircraft noise event's indoor L_{max} reached the speech level of 50 dB, 90 percent of the words would be understood by students seated throughout the classroom (Lind

et al. 1998). Since intermittent aircraft noise does not appreciably disrupt classroom communication at lower levels and other times, the authors also adopted an indoor L_{max} of 50 dB as the maximum single-event level permissible in classrooms. Note that this limit was set based on students with normal hearing and no special needs; at-risk students may be adversely affected at lower sound levels.

Bradley recommends SEL as a better indicator of indoor estimated speech interference in the presence of aircraft overflights (Bradley 1985). For acceptable speech communication using normal vocal efforts, Bradley suggests that the indoor SEL be no greater than 64 dB. He assumes a 26 dB outdoor to indoor noise reduction that equates to 90 dB SEL outdoors. Aircraft events producing outdoor SEL values greater than 90 dB would result in disruption to indoor speech communication. Bradley's work indicates that, for speakers talking with a casual vocal effort, 95 percent intelligibility would be achieved when indoor SEL values did not exceed 60 dB, which translates approximately to an L_{max} of 50 dB.

In the presence of intermittent noise events, ANSI states that the criteria for allowable background noise level can be relaxed since speech is impaired only for the short time when the aircraft noise is close to its maximum value. Consequently, they recommend when the background noise level of the noisiest hour is dominated by aircraft noise, the indoor criteria (35 dB L_{eq} for continuous background noise) can be increased by 5 dB to an L_{eq} of 40 dB, as long as the noise level does not exceed 40 dB for more than 10 percent of the noisiest hour (ANSI 2002).

The WHO does not recommend a specific indoor L_{max} criterion for single-event noise, but does place a guideline value at L_{eq} of 35 dB for overall background noise in the classroom. However, WHO does report that "for communication distances beyond a few meters, speech interference starts at sound pressure levels below 50 dB for octave bands centered on the main speech frequencies at 500 Hz, 1 kHz, and 2 kHz" (WHO 2000). One can infer this can be approximated by an L_{max} value of 50 dB.

The United Kingdom Department for Education and Skills (UKDFES) established in its classroom acoustics guide a 30-minute time-averaged metric [L_{eq} (30min)] for background levels and LA1,30 min for intermittent noises, at thresholds of 30 to 35 dB and 55 dB, respectively. LA1,30 min represents the A-weighted sound level that is exceeded one percent of the time (in this case, during a 30 minute teaching session) and is generally equivalent to the L_{max} metric (UKDFES 2003).

In summary, as the previous section demonstrates, research indicates that it is not only important to consider the continuous background levels using time-averaged metrics, but also the intermittent events, using single-event metrics such as L_{max}. Table C-6 provides a summary of the noise level criteria recommended in the scientific literature.

Table C-6. Indoor Noise Level Criteria Based on Speech Intelligibility		
Source	***Metric/Level (dB)***	***Effects and Notes***
U.S. FAA (1985)	L_{eq}(during school hours) = 45 dB	Federal assistance criteria for school sound insulation; supplemental single-event criteria may be used
Lind *et al.* (1998), Sharp and Plotkin (1984), Wesler (1986)	L_{max} = 50 dB / SIL 45	Single event level permissible in the classroom
WHO (1999)	L_{eq} = 35 dB / Lmax = 50 dB	Assumes average speech level of 50 dB and recommends signal to noise ratio of 15 dB
U.S. ANSI (2002)	L_{eq} = 40 dB	Based on Room Volume Acceptable background level for continuous noise/ relaxed criteria for intermittent noise in the classroom
U.K. DFES (2003)	L_{eq} (30min) = 30-35 dB / L_{max} = 55 dB	Minimum acceptable in classroom and most other learning environs

When considering intermittent noise caused by aircraft overflights, a review of the relevant scientific literature and international guidelines indicates that an appropriate criteria is a limit on indoor background noise levels of 35 to 40 dB L_{eq} and a limit on single events of 50 dB L_{max}.

C2.4 Sleep Disturbance

Sleep disturbance is another source of annoyance associated with aircraft noise. This is especially true because of the intermittent nature and content of aircraft noise, which is more disturbing than continuous noise of equal energy and neutral meaning.

Sleep disturbance may be measured in either of two ways. "Arousal" represents actual awakening from sleep, while a change in "sleep stage" represents a shift from one of four sleep stages to another stage of lighter sleep without actual awakening. In general, arousal requires a somewhat higher noise level than does a change in sleep stage.

An analysis sponsored by the Air Force summarized 21 published studies concerning the effects of noise on sleep (Pearsons *et al*. 1989). The analysis concluded that a lack of reliable in-home studies, combined with large differences among the results from the various laboratory studies, did not permit development of an acceptably accurate assessment procedure. The noise events used in the laboratory studies and in contrived in-home studies were presented at much higher rates of occurrence than would normally be experienced. None of the laboratory studies were of sufficiently long duration to determine any effects of habituation, such as that which would occur under normal community conditions. An extensive study of sleep interference in people's own homes (Ollerhead *et al.* 1992) showed very little disturbance from aircraft noise.

There is some controversy associated with these studies, so a conservative approach should be taken in judging sleep interference. Based on older data, the USEPA identified an indoor DNL of 45 dB as necessary to protect against sleep interference (USEPA 1974). Assuming a very conservative structural noise insulation of 20 dB for typical dwelling units, this corresponds to an outdoor DNL of 65 dB as minimizing sleep interference.

A 1984 publication reviewed the probability of arousal or behavioral awakening in terms of SEL (Kryter 1984). Figure C-4, extracted from Figure 10.37 of Kryter (1984), indicates that an indoor SEL of 65 dB or lower should awaken less than 5 percent of those exposed. These results do not include any habituation over time by sleeping subjects. Nevertheless, this provides a reasonable guideline for assessing sleep interference and corresponds to similar guidance for speech interference, as noted above.

C2.5 Noise-Induced Hearing Impairment

Residents in surrounding communities express concerns regarding the effects of aircraft noise on hearing. This section provides a brief overview of hearing loss caused by noise exposure. The goal is to provide a sense of perspective as to how aircraft noise (as experienced on the ground) compares to other activities that are often linked with hearing loss.

Hearing loss is generally interpreted as a decrease in the ear's sensitivity or acuity to perceive sound; i.e., a shift in the hearing threshold to a higher level. This change can either be a Temporary Threshold Shift (TTS), or a Permanent Threshold Shift (PTS) (Berger *et al.* 1995). TTS can result from exposure to loud noise over a given amount of time, yet the hearing loss is not necessarily permanent. An example of TTS might be a person attending a loud music concert. After the concert is over, the person may experience a threshold shift that may last several hours, depending upon the level and duration of exposure. While experiencing TTS, the person becomes less sensitive to low-level sounds, particularly at certain frequencies in the speech range (typically near 4,000 Hz). Normal hearing ability eventually returns, as long as the person has enough time to recover within a relatively quiet environment.

PTS usually results from repeated exposure to high noise levels, where the ears are not given adequate time to recover from the strain and fatigue of exposure. A common example of PTS is the result of working in a loud environment such as a factory. It is important to note that a temporary shift (TTS) can eventually become permanent (PTS) over time with continuous exposure to high noise levels. Thus, even if the ear is given time to recover from TTS, repeated occurrence of TTS may eventually lead to permanent hearing loss. The point at which a Temporary Threshold Shift results in a Permanent Threshold Shift is difficult to identify and varies with a person's sensitivity.

Considerable data on hearing loss have been collected and analyzed by the scientific/medical community. It has been well established that continuous exposure to high noise levels will damage human hearing (USEPA 1978). The Occupational Safety and Health Administration (OSHA) regulation of 1971 standardizes the limits on workplace noise exposure for protection from hearing loss as an average level of 90 dB over an 8-hour work period or 85 dB over a 16-hour period (the average level is based on a 5 dB decrease per doubling of exposure time) (DoL 1971). Even the most protective criterion (no measurable hearing loss for the most sensitive portion of the population at the ear's most sensitive frequency, 4,000 Hz, after a 40-year exposure) is an average sound level of 70 dB over a 24-hour period.

The USEPA established 75 dB for an 8-hour exposure and 70 dB for a 24-hour exposure as the average noise level standard requisite to protect 96 percent of the population from greater than a 5 dB PTS (USEPA 1978). The National Academy of Sciences Committee on Hearing, Bioacoustics, and Biomechanics identified 75 dB as the minimum level at which hearing loss may occur (CHABA 1977).

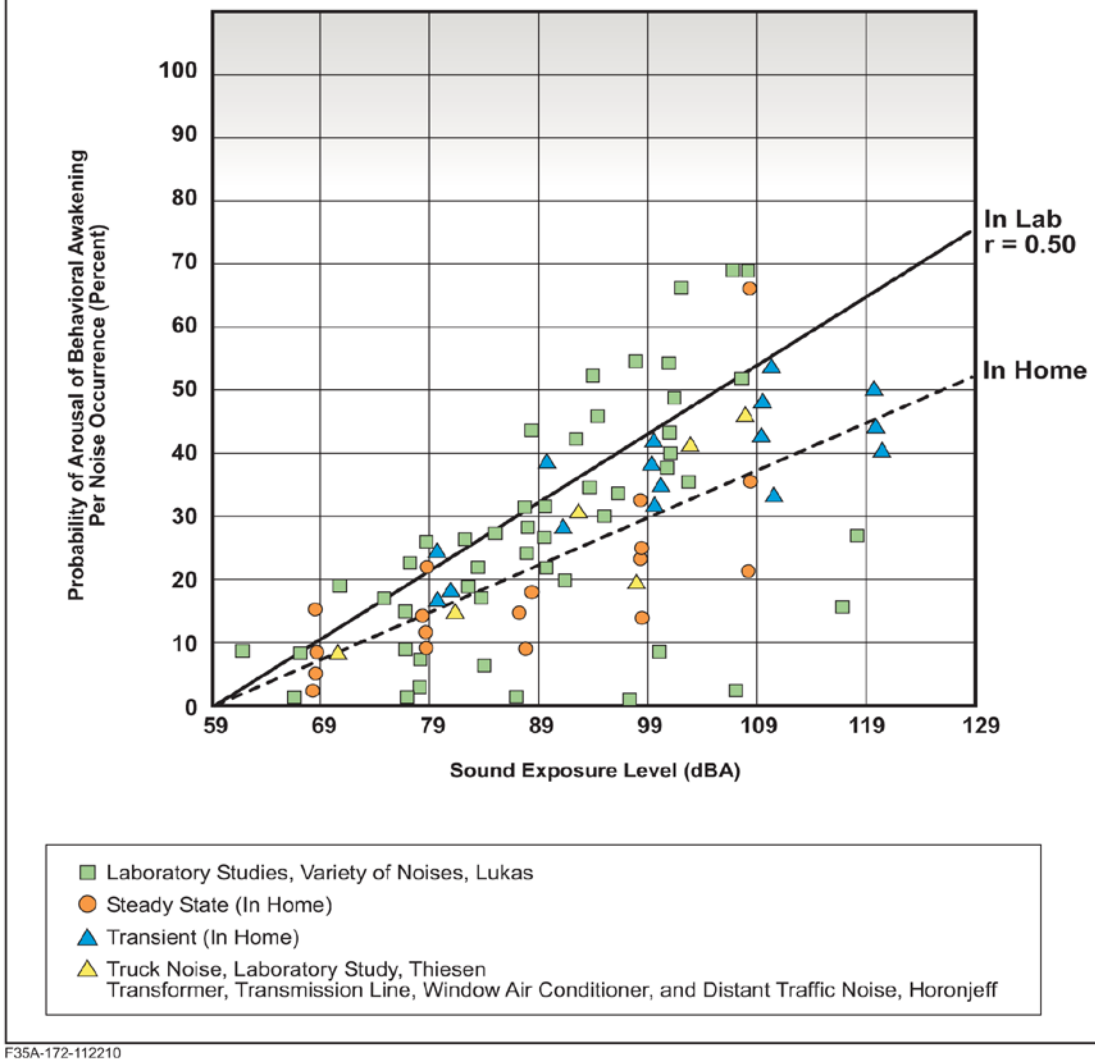


Figure C-4. Probability of Arousal or Behavioral Awakening in Terms of Sound Exposure Level

Finally, the WHO has concluded that environmental and leisure-time noise below an $L_{eq}24$ value of 70 dB "will not cause hearing loss in the large majority of the population, even after a lifetime of exposure" (WHO 2000).

C2.5.1 Hearing Loss and Aircraft Noise

The 1982 USEPA Guidelines report specifically addresses the criteria and procedures for assessing the noise-induced hearing loss in terms of the Noise-Induced Permanent Threshold Shift (NIPTS), a quantity

that defines the permanent change in hearing level, or threshold, caused by exposure to noise (USEPA 1982). This effect is also described as Potential Hearing Loss (PHL). Numerically, the NIPTS is the change in threshold averaged over the frequencies 0.5, 1, 2, and 4 kHz that can be expected from daily exposure to noise over a normal working lifetime of 40 years, with the exposure beginning at an age of 20 years. A grand average of the NIPTS over time (40 years) and hearing sensitivity (10 to 90 percentiles of the exposed population) is termed the Average NIPTS, or Ave NIPTS for short. The Average Noise Induced Permanent Threshold Shift (Ave. NIPTS) that can be expected for noise exposure as measured by the DNL metric is given in Table C-7.

Table C-7. Average NIPTS and 10th Percentile NIPTS as a Function of DNL

DNL	*Ave. NIPTS dB**	*10^{th} Percentile NIPTS dB**
75-76	1.0	4.0
76-77	1.0	4.5
77-78	1.6	5.0
78-79	2.0	5.5
79-80	2.5	6.0
80-81	3.0	7.0
81-82	3.5	8.0
82-83	4.0	9.0
83-84	4.5	10.0
84-85	5.5	11.0
85-86	6.0	12.0
86-87	7.0	13.5
87-88	7.5	15.0
88-89	8.5	16.5
89-90	9.5	18.0

Note:
*Rounded to the nearest 0.5 dB.

For example, for a noise exposure of 80 dB DNL, the expected lifetime average value of NIPTS is 2.5 dB, or 6.0 dB for the 10th percentile. Characterizing the noise exposure in terms of DNL will usually overestimate the assessment of hearing loss risk as DNL includes a 10 dB weighting factor for aircraft operations occurring between 10 p.m. and 7 a.m. If, however, flight operations between the hours of 10 p.m. and 7 a.m. account for 5 percent or less of the total 24-hour operations, the overestimation is on the order of 1.5 dB.

From a civilian airport perspective, the scientific community has concluded that there is little likelihood that the resulting noise exposure from aircraft noise could result in either a temporary or permanent hearing loss. Studies on community hearing loss from exposure to aircraft flyovers near airports showed that there is no danger, under normal circumstances, of hearing loss due to aircraft noise (Newman and Beattie 1985). The USEPA criterion ($L_{eq}24$ = 70 dBA) can be exceeded in some areas located near airports, but that is only the case outdoors. Inside a building, where people are more likely to spend most of their time, the average noise level will be much less than 70 dBA (Eldred and von Gierke 1993). Eldred and von Gierke also report that "several studies in the U.S., Japan, and the U.K. have confirmed the predictions that the possibility for permanent hearing loss in communities, even under the most intense commercial take-off and landing patterns, is remote."

At military airbases, as individual aircraft noise levels are increasing with the introduction of new aircraft, a 2009 DoD policy directive requires that hearing loss risk be estimated for the at risk population, defined as the population exposed to DNL greater than or equal to 80 dB and higher (DoD 2009). Specifically, DoD components are directed to "*use the 80 Day-Night A-Weighted (DNL) noise contour to identify populations at the most risk of potential hearing loss.*" This does not preclude populations outside the 80 DNL contour, i.e., at lower exposure levels, from being at some degree of risk of hearing loss. However, the analysis should be restricted to populations within this contour area, including residents of on-base housing. The exposure of workers inside the base boundary area should be considered occupational and evaluated using the appropriate DoD component regulations for occupational noise exposure.

With regard to military airspace activity, studies have shown conflicting results. A 1995 laboratory study measured changes in human hearing from noise representative of low-flying aircraft on MTRs (Nixon *et al.* 1993). The potential effects of aircraft flying along MTRs is of particular concern because of maximum overflight noise levels can exceed 115 dB, with rapid increases in noise levels exceeding 30 dB per second. In this study, participants were first subjected to four overflight noise exposures at A-weighted levels of 115 dB to 130 dB. Fifty percent of the subjects showed no change in hearing levels, 25 percent had a temporary 5 dB *increase* in sensitivity (the people could hear a 5 dB wider range of sound than before exposure), and 25 percent had a temporary 5 dB decrease in sensitivity (the people could hear a 5 dB narrower range of sound than before exposure). In the next phase, participants were subjected to a single overflight at a maximum level of 130 dB for eight successive exposures, separated by 90 seconds or until a temporary shift in hearing was observed. The temporary hearing threshold shifts showed an increase in sensitivity of up to 10 dB.

In another study of 115 test subjects between 18 and 50 years old in 1999, temporary threshold shifts were measured after laboratory exposure to military low-altitude flight noise (Ising *et al.* 1999). According to the authors, the results indicate that repeated exposure to military low-altitude flight noise with L_{max} greater than 114 dB, especially if the noise level increases rapidly, may have the potential to cause noise induced hearing loss in humans.

Aviation and typical community noise levels near airports are not comparable to the occupational or recreational noise exposures associated with hearing loss. Studies of aircraft noise levels associated with civilian airport activity have not definitively correlated permanent hearing impairment with aircraft activity. It is unlikely that airport neighbors will remain outside their homes 24 hours per day, so there is little likelihood of hearing loss below an average sound level of 75 dB DNL. Near military airbases, average noise levels above 75 dB may occur, and while new DoD policy dictates that NIPTS be evaluated, no research results to date have definitively related permanent hearing impairment to aviation noise.

C2.5.2 Nonauditory Health Effects

Studies have been conducted to determine whether correlations exist between noise exposure and cardiovascular problems, birth weight, and mortality rates. The nonauditory effect of noise on humans is not as easily substantiated as the effect on hearing. The results of studies conducted in the United States, primarily concentrating on cardiovascular response to noise, have been contradictory (Cantrell

1974). Cantrell concluded that the results of human and animal experiments show that average or intrusive noise can act as a stress-provoking stimulus. Prolonged stress is known to be a contributor to a number of health disorders. Kryter and Poza (1980) state, "It is more likely that noise-related general ill-health effects are due to the psychological annoyance from the noise interfering with normal everyday behavior, than it is from the noise eliciting, because of its intensity, reflexive response in the autonomic or other physiological systems of the body." Psychological stresses may cause a physiological stress reaction that could result in impaired health. The National Institute for Occupational Safety and Health (NIOSH) and USEPA commissioned CHABA in 1981 to study whether established noise standards are adequate to protect against health disorders other than hearing defects. CHABA's conclusion was that:

> Evidence from available research reports is suggestive, but it does not provide definitive answers to the question of health effects, other than to the auditory system, of long-term exposure to noise. It seems prudent, therefore, in the absence of adequate knowledge as to whether or not noise can produce effects upon health other than damage to auditory system, either directly or mediated through stress, that insofar as feasible, an attempt should be made to obtain more critical evidence.

Since the CHABA report, there have been further studies that suggest that noise exposure may cause hypertension and other stress-related effects in adults. Near an airport in Stockholm, Sweden, the prevalence of hypertension was reportedly greater among nearby residents who were exposed to energy averaged noise levels exceeding 55 dB and maximum noise levels exceeding 72 dB, particularly older subjects and those not reporting impaired hearing ability (Rosenlund *et al*. 2001). A study of elderly volunteers who were exposed to simulated military low-altitude flight noise reported that blood pressure was raised by L_{max} of 112 dB and high speed level increase (Michalak *et al*. 1990).

Yet another study of subjects exposed to varying levels of military aircraft or road noise found no significant relationship between noise level and blood pressure (Pulles *et al*. 1990). The U.S. Department of the Navy prepared a programmatic Environmental Assessment (EA) for the continued use of non-explosive ordnance on the Vieques Inner Range. Following the preparation of the EA, it was learned that research conducted by the University of Puerto Rico, Ponce School of Medicine, suggested that Vieques fishermen and their families were experiencing symptoms associated with vibroacoustic disease (VAD) (DoN 2002). The study alleged that exposure to noise and sound waves of large pressure amplitudes within lower frequency bands, associated with Navy training activities—specifically, air-to-ground bombing or naval fire support—was related to a larger prevalence of heart anomalies within the Vieques fishermen and their families. The Ponce School of Medicine study compared the Vieques group with a group from Ponce Playa. A 1999 study conducted on Portuguese aircraft-manufacturing workers from a single factory reported effects of jet aircraft noise exposure that involved a wide range of symptoms and disorders, including the cardiac issues on which the Ponce School of Medicine study focused. The 1999 study identified these effects as VAD.

Johns Hopkins University (JHU) conducted an independent review of the Ponce School of Medicine study, as well as the Portuguese aircraft workers study and other relevant scientific literature. Their findings concluded that VAD should not be accepted as a syndrome, given that exhaustive research across a number of populations has not yet been conducted. JHU also pointed out that the evidence

supporting the existence of VAD comes largely from one group of investigators and that similar results would have to be replicated by other investigators. In short, JHU concluded that it had not been established that noise was the causal agent for the symptoms reported and no inference can be made as to the role of noise from naval gunfire in producing echocardiographic abnormalities (DoN 2002).

Most studies of nonauditory health effects of long-term noise exposure have found that noise exposure levels established for hearing protection will also protect against any potential nonauditory health effects, at least in workplace conditions. One of the best scientific summaries of these findings is contained in the lead paper at the National Institutes of Health Conference on Noise and Hearing Loss, held on 22 to 24 January 1990 in Washington, D.C.:

> The nonauditory effects of chronic noise exposure, when noise is suspected to act as one of the risk factors in the development of hypertension, cardiovascular disease, and other nervous disorders, have never been proven to occur as chronic manifestations at levels below these criteria (an average of 75 dBA for complete protection against hearing loss for an 8-hour day).

At the 1988 International Congress on Noise as a Public Health Problem, most studies attempting to clarify such health effects did not find them at levels below the criteria protective of noise-induced hearing loss, and even above these criteria, results regarding such health effects were ambiguous. Consequently, one comes to the conclusion that establishing and enforcing exposure levels protecting against noise-induced hearing loss would not only solve the noise-induced hearing loss problem, but also any potential nonauditory health effects in the work place" (von Gierke 1990).

Although these findings were specifically directed at noise effects in the workplace, they are equally applicable to aircraft noise effects in the community environment. Research studies regarding the nonauditory health effects of aircraft noise are ambiguous, at best, and often contradictory. Yet, even those studies that purport to find such health effects use time-average noise levels of 75 dB and higher for their research.

For example, two UCLA researchers apparently found a relationship between aircraft noise levels under the approach path to Los Angeles International Airport and increased mortality rates among the exposed residents by using an average noise exposure level greater than 75 dB for the "noise-exposed" population (Meacham and Shaw 1979). Nevertheless, three other UCLA professors analyzed those same data and found no relationship between noise exposure and mortality rates (Frerichs *et al*. 1980).

As a second example, two other UCLA researchers used this same population near LAX to show a higher rate of birth defects for 1970 to 1972 when compared with a control group residing away from the airport (Jones and Tauscher 1978). Based on this report, a separate group at the Center for Disease Control performed a more thorough study of populations near Atlanta's Hartsfield International Airport for 1970 to 1972 and found no relationship in their study of 17 identified categories of birth defects to aircraft noise levels above 65 dB (Edmonds *et al*. 1979).

In summary, there is no scientific basis for a claim that potential health effects exist for aircraft time average sound levels below 75 dB. The potential for noise to affect physiological health, such as the cardiovascular system, has been speculated; however, no unequivocal evidence exists to support such claims (Harris 1997). Conclusions drawn from a review of health effect studies involving military low-altitude flight noise with its unusually high maximum levels and rapid rise in sound level have shown no increase in cardiovascular disease (Schwartze and Thompson 1993). Additional claims that are unsupported include flyover noise producing increased mortality rates and increases in cardiovascular death, aggravation of post-traumatic stress syndrome, increased stress, increases in admissions to mental hospitals, and adverse affects on pregnant women and the unborn fetus (Harris 1997).

C2.5.3 Performance Effects

The effect of noise on the performance of activities or tasks has been the subject of many studies. Some of these studies have established links between continuous high noise levels and performance loss. Noise-induced performance losses are most frequently reported in studies employing noise levels in excess of 85 dB. Little change has been found in low-noise cases. It has been cited that moderate noise levels appear to act as a stressor for more sensitive individuals performing a difficult psychomotor task. While the results of research on the general effect of periodic aircraft noise on performance have yet to yield definitive criteria, several general trends have been noted including:

- A periodic intermittent noise is more likely to disrupt performance than a steady-state continuous noise of the same level. Flyover noise, due to its intermittent nature, might be more likely to disrupt performance than a steady-state noise of equal level.
- Noise is more inclined to affect the quality than the quantity of work.
- Noise is more likely to impair the performance of tasks that place extreme demands on the worker.

C2.5.4 Noise Effects on Children

In response to noise-specific and other environmental studies, Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks (1997), requires federal agencies to ensure that policies, programs, and activities address environmental health and safety risks to identify any disproportionate risks to children.

A review of the scientific literature indicates that there has not been a tremendous amount of research in the area of aircraft noise effects on children. The research reviewed does suggest that environments with sustained high background noise can have variable effects, including noise effects on learning and cognitive abilities, and reports of various noise-related physiological changes.

C2.5.5 Effects on Learning and Cognitive Abilities

In 2002 ANSI refers to studies that suggest that loud and frequent background noise can affect the learning patterns of young children (ANSI 2002). ANSI provides discussion on the relationships between noise and learning, and stipulates design requirements and acoustical performance criteria for outdoor-to-indoor noise isolation. School design is directed to be cognizant of, and responsive to surrounding

land uses and the shielding of outdoor noise from the indoor environment. The ANSI acoustical performance criteria for schools include the requirement that the 1-hour-average background noise level shall not exceed 35 dBA in core learning spaces smaller than 20,000 cubic-feet and 40 dBA in core learning spaces with enclosed volumes exceeding 20,000 cubic-feet. This would require schools be constructed such that, in quiet neighborhoods indoor noise levels are lowered by 15 to 20 dBA relative to outdoor levels. In schools near airports, indoor noise levels would have to be lowered by 35 to 45 dBA relative to outdoor levels (ANSI 2002).

The studies referenced by ANSI to support the new standard are not specific to jet aircraft noise and the potential effects on children. However, there are references to studies that have shown that children in noisier classrooms scored lower on a variety of tests. Excessive background noise or reverberation within schools causes interferences of communication and can therefore create an acoustical barrier to learning (ANSI 2002). Studies have been performed that contribute to the body of evidence emphasizing the importance of communication by way of the spoken language to the development of cognitive skills. The ability to read, write, comprehend, and maintain attentiveness, are, in part, based upon whether teacher communication is consistently intelligible (ANSI 2002).

Numerous studies have shown varying degrees of effects of noise on the reading comprehension, attentiveness, puzzle-solving, and memory/recall ability of children. It is generally accepted that young children are more susceptible than adults to the effects of background noise. Because of the developmental status of young children (linguistic, cognitive, and proficiency), barriers to hearing can cause interferences or disruptions in developmental evolution.

Research on the impacts of aircraft noise, and noise in general, on the cognitive abilities of school-aged children has received more attention in the last 20 years. Several studies suggest that aircraft noise can affect the academic performance of schoolchildren. Although many factors could contribute to learning deficits in school-aged children (e.g., socioeconomic level, home environment, diet, sleep patterns), evidence exists that suggests that chronic exposure to high aircraft noise levels can impair learning. Specifically, elementary school children attending schools near New York City's two airports demonstrated lower reading scores than children living farther away from the flight paths (Green *et al*. 1982). Researchers have found that tasks involving central processing and language comprehension (such as reading, attention, problem solving, and memory) appear to be the most affected by noise (Evans and Lepore 1993, Hygge 1994, and Evans *et al*. 1998). It has been demonstrated that chronic exposure of first- and second-grade children to aircraft noise can result in reading deficits and impaired speech perception (i.e., the ability to hear common, low-frequency [vowel] sounds but not high frequencies [consonants] in speech) (Evans and Maxwell 1997).

The Evans and Maxwell (1997) study found that chronic exposure to aircraft noise resulted in reading deficits and impaired speech perception for first- and second-grade children. Other studies found that children residing near the Los Angeles International Airport had more difficulty solving cognitive problems and did not perform as well as children from quieter schools in puzzle-solving and attentiveness (Bronzaft 1997, Cohen *et al*. 1980). Children attending elementary schools in high aircraft noise areas near London's Heathrow Airport demonstrated poorer reading comprehension and selective cognitive impairments (Haines *et al*. 2001a,b). Similarly, a 1994 study found that students exposed to

aircraft noise of approximately 76 dBA scored 20 percent lower on recall ability tests than students exposed to ambient noise of 42-44 dBA (Hygge 1994). Similar studies involving the testing of attention, memory, and reading comprehension of school children located near airports showed that their tests exhibited reduced performance results compared to those of similar groups of children who were located in quieter environments (Evans *et al*. 1998, Haines *et al*. 1998). The Haines and Stansfeld study indicated that there may be some long-term effects associated with exposure, as one-year follow-up testing still demonstrated lowered scores for children in higher noise schools (Haines *et al.* 2001a,b). In contrast, a 2002 study found that although children living near the old Munich airport scored lower in standardized reading and long-term memory tests than a control group, their performance on the same tests were equal to that of the control group once the airport was closed (Hygge *et al*. 2002).

Finally, although it is recognized that there are many factors that could contribute to learning deficits in school-aged children, there is increasing awareness that chronic exposure to high aircraft noise levels may impair learning. This awareness has led the WHO and a North Atlantic Treaty Organization (NATO) working group to conclude that daycare centers and schools should not be located near major sources of noise, such as highways, airports, and industrial sites (WHO 2000, NATO 2000).

C2.5.6 Health Effects

Physiological effects in children exposed to aircraft noise and the potential for health effects have also been the focus of limited investigation. Studies in the literature include examination of blood pressure levels, hormonal secretions, and hearing loss.

As a measure of stress response to aircraft noise, authors have looked at blood pressure readings to monitor children's health. Children who were chronically exposed to aircraft noise from a new airport near Munich, Germany, had modest (although significant) increases in blood pressure, significant increases in stress hormones, and a decline in quality of life (Evans *et al*. 1998). Children attending noisy schools had statistically significant average systolic and diastolic blood pressure ($p<0.03$). Systolic blood pressure means were 89.68 mm for children attending schools located in noisier environments compared to 86.77 mm for a control group. Similarly, diastolic blood pressure means for the noisier environment group were 47.84 mm and 45.16 for the control group (Cohen *et al*. 1980).

Although the literature appears limited, studies focused on the wide range of potential effects of aircraft noise on school children have also investigated hormonal levels between groups of children exposed to aircraft noise compared to those in a control group. Specifically, two studies analyzed cortisol and urinary catecholamine levels in school children as measurements of stress response to aircraft noise (Haines *et al*. 2001b,c). In both instances, there were no differences between the aircraft-noise-exposed children and the control groups.

Other studies have reported hearing losses from exposure to aircraft noise. Noise-induced hearing loss was reportedly higher in children who attended a school located under a flight path near a Taiwan airport, as compared to children at another school far away (Chen *et al*. 1997). Another study reported that hearing ability was reduced significantly in individuals who lived near an airport and were frequently exposed to aircraft noise (Chen and Chen 1993). In that study, noise exposure near the

airport was reportedly uniform, with DNL greater than 75 dB and maximum noise levels of about 87 dB during overflights. Conversely, several other studies that were reviewed reported no difference in hearing ability between children exposed to high levels of airport noise and children located in quieter areas (Fisch 1977, Andrus *et al*. 1975, Wu *et al*. 1995).

C2.6 Noise Effects on Domestic Animals and Wildlife

Hearing is critical to an animal's ability to react, compete, reproduce, hunt, forage, and survive in its environment. While the existing literature does include studies on possible effects of jet aircraft noise and sonic booms on wildlife, there appears to have been little concerted effort in developing quantitative comparisons of aircraft noise effects on normal auditory characteristics. Behavioral effects have been relatively well described, but the larger ecological context issues, and the potential for drawing conclusions regarding effects on populations, has not been well developed.

The following discussion provides an overview of the existing literature on noise effects (particularly jet aircraft noise) on animal species. The literature reviewed outlines those studies that have focused on the observations of the behavioral effects and sometimes physiological responses of animals to jet aircraft overflight and sonic booms.

The abilities to hear sounds and noise and to communicate assist wildlife in maintaining group cohesiveness and survivorship. Social species communicate by transmitting calls of warning, introduction, and others that are subsequently related to an individual's or group's responsiveness. Animal species differ greatly in their responses to noise. Noise effects on domestic animals and wildlife are classified as primary, secondary, and tertiary.

Primary effects are direct, physiological changes to the auditory system, and most likely include the masking of auditory signals. Masking is defined as the inability of an individual to hear important environmental signals that may arise from mates, predators, or prey. There is some potential that noise could disrupt a species' ability to communicate or interfere with behavioral patterns (Manci *et al.* 1988; Warren *et al.* 2006); however, this would be a greater concern for continuous and near continuous noise sources (e.g., compressors, near busy highway) than for intermittent brief exposures such as military jet overflight. Increased noise levels reduce the distance and area over which acoustic signals can be perceived by animals (Barber *et al.* 2009). Although the effects are likely temporal, aircraft noise may cause masking of auditory signals within exposed faunal communities. Animals rely on hearing to avoid predators, obtain food, and communicate and attract other members of their species. Aircraft noise may mask or interfere with these functions. Other primary effects, such as ear drum rupture or temporary and permanent hearing threshold shifts, are not as likely given the subsonic noise levels produced by aircraft overflights.

Secondary effects may include non-auditory effects such as stress and hypertension; behavioral modifications; interference with mating or reproduction; and impaired ability to obtain adequate food, cover, or water. Tertiary effects are the direct result of primary and secondary effects. These include population decline and habitat loss. Most of the effects of noise are mild enough to be undetectable as variables of change in population size or population growth against the background of normal variation

(Bowles 1995). Other environmental variables (e.g., predators, weather, changing prey base, ground-based disturbance) also influence secondary and tertiary effects and confound the ability to identify the ultimate factor in limiting productivity of a certain nest, area, or region (Smith *et al.* 1988). Overall, the literature suggests that species differ in their response to various types, durations, and sources of noise (Manci *et al.* 1988; Radle 2007; NPS 2011) and that response of unconfined wildlife and domestic animals to aircraft overflight under most circumstances has minimal biological significance.

Considerable research has been conducted on the effects of aircraft noise on the public and the potential for adverse ecological impacts. These studies were largely completed in response to the increase in air travel and the introduction of supersonic commercial jet aircraft. According to Manci *et al*. (1988), the foundation of information created from that focus does not necessarily correlate or provide information specific to the impacts to wildlife in areas overflown by aircraft at supersonic speed or at low altitudes. A 1997 review revealed that aircraft noise plays a minor role in disturbance to animals when separated from the optical stimuli and uses examples of nearly soundless paragliders causing panic flights (Kempf and Hüppop 1997). This research indicated that sonic booms and jet aircraft noise can cause startle responses, but do not result in severe consequences and severity of response depends upon previous exposure. These authors felt that aside from the rare panic flights causing accidents, negative consequences of aircraft noise per se on individuals and populations are not proven (Kempf and Hüppop 1997). Similarly, the Air Force has conducted many studies and defines a startle or startle response as the sequence of events that occurs when an animal is surprised, including behavioral responses (muscular flinching, alerting and running) and physiological changes (e.g., elevated heart rate and other physiologic changes) (Air Force 1994). The startle is a natural response that helped the ancestors of domestic stock avoid predators. If the behavioral component of the startle is uncontrolled, particularly if the animal runs or jumps without concern for its safety, it is often called a panic. Completely uncontrolled panics are rare in mammals (U.S. Air Force 1994b).

Pepper *et al.* (2003) suggest that many past studies were inconclusive and based on relatively small sample sizes and that more work is needed to determine if noise adversely impacts wildlife. Research into the effects of noise on wildlife often presents conflicting results because of the variety of factors and variables that can affect and/or interfere with the determination of the actual effects that human-produced noise is having on any given animal (Radle 2007).

Many scientific studies have investigated the effects of aircraft noise on wildlife, and some have focused on wildlife "flight" due to noise. Apparently, animal responses to aircraft are influenced by many variables, including size, speed, proximity (both height above the ground and lateral distance), engine noise, color, flight profile, and radiated noise. The type of aircraft (e.g., fixed wing [jets] versus rotary-wing [helicopters]) and type of flight mission may also produce different levels of disturbance, with varying animal responses (Smith *et al.* 1988). Consequently, it is difficult to generalize animal responses to noise disturbances across species.

Periodic literature reviews have concluded that, while behavioral observation studies were relatively limited a general behavioral reaction in animals from exposure to aircraft noise/overflight ranges from performing a visual scan to altering to a startle response (Manci *et al.* 1988; Bowles 1995; NPS 2011). The intensity and duration of the startle response appears to be dependent on which

species is exposed, whether there is a group or an individual, and whether there have been previous exposures. Responses range from movement of the head in the apparent direction of the noise source, to alerting, and in rare cases to flight, trampling, stampeding, jumping, or running. Manci *et al*. (1988) reported that the literature indicated that avian species might be more sensitive to aircraft noise than mammals. In addition to flight, other concerns with regard to impact from noise disturbance on wildlife or livestock include the following possible responses and effects:

- Possible injury due to trampling or uncontrolled running or flight,
- Increased expenditure of energy, particularly during critical periods (e.g., breeding, winter),
- Decreased time spent on life functions (e.g., seeking food or mates),
- Temporary masking of auditory signals from other animals of the same species, predators, or prey (e.g., noise could prevent an animal from hearing the approach of a predator),
- Damage to eggs or nestlings if a bird is startled from its nest,
- Temporary exposure of eggs or young in nest to environmental conditions or predation if a parent flees, and
- Temporary increased risk of predation if startled animals flee from nests, roosts, or other protective cover.

Although the above-listed concerns have been raised in the literature and examples have been documented, studies of unconfined wildlife and domestic animals to overflight by military jet aircraft at 500 feet above ground level (AGL) or higher have not shown measurable changes in population size or reproductive success at the population level or other significant biological impact under normal conditions.

C2.6.1 Domestic Animals

Although some studies report that the effects of aircraft noise on domestic animals is inconclusive, a majority of the literature reviewed indicates that domestic animals exhibit some behavioral responses to military overflights, but generally seem to habituate to the disturbances over a period of time. Mammals in particular appear to react to noise at sound levels higher than 90 dB, with responses including the startle response, freezing (i.e., becoming temporarily stationary), and fleeing from the sound source. Many studies on domestic animals suggest that some species appear to acclimate to some forms of sound disturbance (Manci *et al*. 1988). Some studies have reported primary and secondary effects including reduced milk production and rate of milk release, increased glucose concentrations, decreased levels of hemoglobin, increased heart rate, and a reduction in thyroid activity. These latter effects appear to represent a small percentage of the findings occurring in the existing literature.

Some reviewers have indicated that earlier studies and claims by farmers linking adverse effects of aircraft noise on livestock did not necessarily provide clear-cut evidence of cause and effect (Cottereau 1978). In contrast, many studies conclude that there is no evidence that aircraft overflights affect feed intake, growth, or production rates in domestic animals.

Cattle

In response to concerns about overflight effects on pregnant cattle, milk production, and cattle safety, the U.S. Air Force prepared a handbook for environmental protection that summarizes the literature on the impacts of low-altitude flights on livestock (and poultry), and includes specific case studies conducted in numerous airspaces across the country. Adverse effects have been found in a few studies, but have not been reproduced in other similar studies. One such study, conducted in 1983, suggested that 2 of 10 cows in late pregnancy aborted after showing rising estrogen and falling progesterone levels. These increased hormonal levels were reported as being linked to 59 aircraft overflights. The remaining eight cows showed no changes in their blood concentrations and calved normally (U.S. Air Force 1994b). A similar study reported that abortions occurred in three out of five pregnant cattle after exposing them to flyovers by six different aircraft (U.S. Air Force 1994b). Another study suggested that feedlot cattle could stampede and injure themselves when exposed to low-level overflights (U.S. Air Force 1994b).

A majority of the studies reviewed suggest that there is little or no effect of aircraft noise on cattle. Studies presenting adverse effects on domestic animals have been limited. A number of studies (Parker and Bayley 1960; Casady and Lehmann 1967; Kovalcik and Sottnik 1971) investigated the effects of jet aircraft noise and sonic booms on the milk production of dairy cows. Through the compilation and examination of milk production data from areas exposed to jet aircraft noise and sonic boom events, it was determined that milk yields were not affected. This was particularly evident in those cows that had been previously exposed to jet aircraft noise.

One study examined the causes of 1,763 abortions in Wisconsin dairy cattle over a one-year time period, and none were associated with aircraft disturbances (U.S. Air Force 1993). In 1987, Anderson contacted seven livestock operators for production data, and no effects of low-altitude and supersonic flights were noted. Three out of 43 cattle previously exposed to low-altitude flights showed a startle response to an F/A-18 aircraft flying overhead at 500 feet above ground level at 400 knots by running less than 10 meters. They resumed normal activity within one minute (U.S. Air Force 1994b). In 1983, Beyer found that helicopters caused more reaction than other low-aircraft overflights. A 1964 study also found that helicopters flying 30 to 60 feet overhead did not affect milk production and pregnancies of 44 cows and heifers (U.S. Air Force 1994b).

Additionally, Beyer reported that five pregnant dairy cows in a pasture did not exhibit fright-flight tendencies or have their pregnancies disrupted after being overflown by 79 low-altitude helicopter flights and 4 low-altitude, subsonic jet aircraft flights (U.S. Air Force 1994b). A 1956 study found that the reactions of dairy and beef cattle to noise from low-altitude, subsonic aircraft were similar to those caused by paper blowing about, strange persons, or other moving objects (U.S. Air Force 1994b).

In a report to Congress, the U.S. Forest Service concluded that “evidence both from field studies of wild ungulates and laboratory studies of domestic stock indicate that the risks of damage are small (from aircraft approaches of 50 to 100 meters), as animals take care not to damage themselves (U.S. Forest Service 1992). If animals are overflown by aircraft at altitudes of 50 to 100 meters, there is no evidence that mothers and young are separated, that animals collide with obstructions (unless confined) or that

they traverse dangerous ground at too high a rate." These varied study results suggest that, although the confining of cattle could magnify animal response to aircraft overflight, there is no proven cause-and-effect link between startling cattle from aircraft overflights and abortion rates or lower milk production.

Horses

Horses have also been observed to react to overflights of jet aircraft. Several of the studies reviewed reported a varied response of horses to low-altitude aircraft overflights. Observations made in 1966 and 1968 noted that horses galloped in response to jet flyovers (U.S. Air Force 1993). In 1995, Bowles cites Kruger and Erath as observing horses exhibiting intensive flight reactions, random movements, and biting/kicking behavior. However, no injuries or abortions occurred, and there was evidence that the mares adapted somewhat to the flyovers over the course of a month (U.S. Air Force 1994b). Although horses were observed noticing the overflights, it did not appear to affect either survivability or reproductive success. There was also some indication that habituation to these types of disturbances was occurring.

LeBlanc *et al*. studied the effects of F-14 jet aircraft noise on pregnant mares (1991). They specifically focused on any changes in pregnancy success, behavior, cardiac function, hormonal production, and rate of habituation. Their findings reported observations of "flight-fright" reactions, which caused increases in heart rates and serum cortisol concentrations. The mares, however, did habituate to the noise. Levels of anxiety and mass body movements were the highest after initial exposure, with intensities of responses decreasing thereafter. There were no differences in pregnancy success when compared to a control group.

Swine

Generally, the literature findings for swine appear to be similar to those reported for cows and horses. While there are some effects from aircraft noise reported in the literature, these effects are minor. Studies of continuous noise exposure (i.e., 6 hours or 72 hours of constant exposure) reported influences on short-term hormonal production and release. Additional constant exposure studies indicated the observation of stress reactions, hypertension, and electrolyte imbalances (Dufour 1980). A study by Bond *et al*. demonstrated no adverse effects on the feeding efficiency, weight gain, ear physiology, or thyroid and adrenal gland condition of pigs subjected to aircraft noise (1963). Observations of heart rate increase were recorded and it was noted that cessation of the noise resulted in the return to normal heart rates. Conception rates and offspring survivorship did not appear to be influenced by exposure to aircraft noise.

Similarly, simulated aircraft noise at levels of 100 dB to 135 dB had only minor effects on the rate of feed utilization, weight gain, food intake, and reproduction rates of boars and sows exposed, and there were no injuries or inner ear changes observed (Manci *et al*. 1988; Gladwin *et al*. 1988).

Domestic Fowl

According to a 1994 position paper by the U.S. Air Force on effects of low-altitude overflights (below 1,000 feet) on domestic fowl, overflight activity has negligible effects (U.S. Air Force 1994a). The paper did recognize that given certain circumstances, adverse effects can be serious. Some of the effects can be panic reactions, reduced productivity, and effects on marketability (e.g., bruising of the meat caused during "pile-up" situations).

The typical reaction of domestic fowl after exposure to sudden, intense noise is a short-term startle response. The reaction ceases as soon as the stimulus is ended, and within a few minutes all activity returns to normal. More severe responses are possible depending on the number of birds, the frequency of exposure, and environmental conditions. Large crowds of birds and birds not previously exposed are more likely to pile up in response to a noise stimulus (U.S. Air Force 1994a). According to studies and interviews with growers, it is typically the previously unexposed birds that incite panic crowding, and the tendency to do so is markedly reduced within five exposures to the stimulus (U.S. Air Force 1994a). This suggests that the birds habituate relatively quickly. Egg productivity was not adversely affected by infrequent noise bursts, even at exposure levels as high as 120 to 130 dBA.

Between 1956 and 1988, there were 100 recorded claims against the Navy for alleged damage to domestic fowl. The number of claims averaged three per year, with peak numbers of claims following publications of studies on the topic in the early 1960s (U.S. Air Force 1994a). Many of the claims were disproved or did not have sufficient supporting evidence. The claims were filed for the following alleged damages: 55 percent for panic reactions, 31 percent for decreased production, 6 percent for reduced hatchability, 6 percent for weight loss, and less than 1 percent for reduced fertility (U.S. Air Force 1994a).

Turkeys

The review of the existing literature suggests that there has not been a concerted or widespread effort to study the effects of aircraft noise on commercial turkeys. One study involving turkeys examined the differences between simulated versus actual overflight aircraft noise, turkey responses to the noise, weight gain, and evidence of habituation (Bowles *et al*. 1990). Findings from the study suggested that turkeys habituated to jet aircraft noise quickly, that there were no growth rate differences between the experimental and control groups, and that there were some behavioral differences that increased the difficulty in handling individuals within the experimental group.

Low-altitude overflights were shown to cause turkey flocks which were kept inside turkey houses to occasionally pile up and experience high mortality rates due to the aircraft noise and a variety of disturbances unrelated to aircraft (U.S. Air Force 1994a).

C2.6.2 Wildlife

Studies on the effects of overflights and sonic booms on wildlife have been focused mostly on avian species and ungulates such as caribou and bighorn sheep. Few studies have been conducted on marine mammals, small terrestrial mammals, reptiles, amphibians, and carnivorous mammals. Generally,

species that live entirely below the surface of the water have also been ignored due to the fact they do not experience the same level of sound as terrestrial species (National Park Service 1994). Wild ungulates appear to be much more sensitive to noise disturbance than domestic livestock (Manci *et al.* 1988). This may be due to previous exposure to disturbances. One common factor appears to be that low-altitude flyovers seem to be more disruptive in terrain where there is little cover (Manci *et al*. 1988).

C2.6.3 Mammals

Terrestrial Mammals

Sound levels above about 90 dB may be detrimental to mammals and may be associated with a number of behaviors such as retreat from the sound source, freezing, or a strong startle response (Manci *et al.* 1988). Studies of terrestrial mammals have shown that noise levels of 120 dBA can damage mammals' ears, and levels of 95 dBA can cause temporary loss of hearing acuity.

It has been speculated that repeated aircraft overflight (e.g. surveillance flights along a pipeline) could affect large carnivores such as grizzly bears by causing changes in home ranges, foraging patterns, and breeding behavior (Dufour 1980). These possible effects have not been borne out in subsequent studies, although wolves have been frightened by low-altitude flights that were 25 to 1,000 feet off the ground. However, wolves have been found to adapt to aircraft overflights and noise as long as they were not being hunted from aircraft (Dufour 1980). Incidental observations of wolves and bears exposed to fixed-wing aircraft and helicopters indicated a stronger reaction to helicopters, and that wolves were less disturbed by helicopters than wild ungulates, while individual grizzly bears showed the greatest response of any animal species observed (Manci *et al*. 1988) although response to overflight by grizzly bears varied from individual to individual Dufour (1980).

Wild ungulates (such as American bison, caribou, and bighorn sheep) appear to be much more sensitive to noise disturbance than domestic livestock (Manci *et al.* 1988; Weisenberger *et al*. 1996; Bleich *et al*. 1990, 1994). Behavioral reactions may be related to the past history of disturbances by such things as humans and aircraft. Behavioral reactions may be related to the past history of disturbances by such things as humans and aircraft. Behavioral turning to orient toward the aircraft. Moderate responses to disturbance may be nervous behaviors, such as trotting a short distance. Escape behavior would represent a typical severe response, but it is rarely observed in response to overflight above 500 feet AGL that does not include circling.

Common reactions of reindeer kept in an enclosure and exposed to aircraft noise disturbance included alerting postures, raising of the head, pricking ears, and scenting of the air. Panic reactions and extensive changes in behavior of individual animals were not observed. Observations of caribou in Alaska exposed to fixed-wing aircraft and helicopters showed running and panic reactions occurred when overflights were at an altitude of 200 feet or less. The reactions decreased with increased altitude of overflights, and for overflights higher than 500 feet in altitude, the panic reactions stopped. Also, smaller groups reacted less strongly than larger groups. One negative effect of running and avoidance behavior is increased expenditure of energy, which can usually be counteracted with increased feeding. It has been shown that exposure to low-altitude overflights can result in increased heart rates, an

indicator of excitement or stress, in pronghorn, mule deer, elk, and bighorn sheep. Weisenberger *et al*. (1996) measured the heart rate responses of captive bighorn sheep (*Ovis canadensis*) and mule deer (*Odocoileus hemionus*) to simulated aircraft noise ranging from 92 to 112 dB. For both species, heart rates increased following the simulated aircraft noise, but returned to normal levels within 60 to 180 seconds. Behavioral responses were relatively rare, and the animals returned to normal behavior within four to five minutes. Furthermore, the animals exhibited decreased responses to increased exposure, suggesting habituation. A study reported possible effects on bighorn sheep energetic reserves through changes in food intake when helicopters were within 500 meters of animals (Bowles 1995).

Authors observed that bighorn sheep alerted more while eating in the presence of helicopters than when undisturbed. They concluded that frequent alerting affected food intake. Krausman *et al.* (1998) studied the response of bighorn sheep in a 790-acre enclosure to frequent F-16 overflights at 395 feet AGL. Heart rates increased above preflight level during 7 percent of the overflights but returned to normal within 120 seconds. No behavioral response by the bighorn sheep was observed during the overflights.

Studies on pronghorn (*Antilocapra americana*) response to overflight by jet aircraft and helicopters have suggested rapid habituation to overflight after initial responses, which include running for short distances (Workman *et al*. 1992; Bayless *et al*. 2004). In the Bayless *et al*. (2004) study, which included day and night exposures to nearby helicopter activity, there were fewer movements in response to overflight during nighttime hours than during daylight, suggesting a visual component to the reaction in addition to noise. Luz and Smith (1976) observed that pronghorn did not run until a helicopter was within 150 feet AGL. Krausman *et al.* (2004) found that endangered Sonoran pronghorn on the Barry M. Goldwater Range (BMGR) rarely responded to military aircraft but often moved 10 meters or more when ground stimuli were present.

Although few studies have been conducted on the response of wild ungulates to sonic booms, these disturbances appear to have little-to-no adverse effects. Workman *et al.* (1992) studied the physiological and behavioral responses of captive pronghorn, elk (*Cervus elaphus*), and bighorn sheep to sonic booms. All three species exhibited an increase in heart rate that lasted for 30 to 90 seconds in response to their first exposure to a sonic boom. Behaviorally, the animals responded to their first exposure to a sonic boom by running a short distance (less than 30 feet reported for elk). After successive sonic booms, the heart-rate response decreased greatly and the animals remained alert, but did not run. The authors suggested the animals became habituated in response to successive exposures.

Marine Mammals

The physiological composition of the ear in aquatic and marine mammals exhibits adaptation to the aqueous environment. These differences (relative to terrestrial species) manifest themselves in the auricle and middle ear (Manci *et al*. 1988). Some mammals use echolocation to perceive objects in their surroundings and to determine the directions and locations of sound sources (Manci *et al*. 1988).

In 1980, the Acoustical Society of America held a workshop to assess the potential hazard of manmade noise associated with proposed Alaskan Arctic (North Slope-Outer Continental Shelf) petroleum operations on marine wildlife, and to prepare a research plan to secure the knowledge necessary for proper assessment of noise impacts (Acoustical Society of America 1980). Since 1980, it appears that research on the responses of aquatic mammals to aircraft noise and sonic booms has been limited. Research conducted on northern fur seals, sea lions, and ringed seals indicated that there are some differences in how various animal groups receive frequencies of sound. It was observed that these species exhibited varying intensities of a startle response to airborne noise, which was habituated over time. The rates of habituation appeared to vary with species, populations, and demographics (age, sex). Time of day of exposure was also a factor (Manci *et al*. 1988).

Studies accomplished near the Channel Islands were conducted near the area where the space shuttle launches occur. It was found that there were some response differences between species relative to the loudness of sonic booms. Those booms that were between 80 and 89 dBA caused a greater intensity of startle reactions than lower-intensity booms at 72 to 79 dBA. However, the duration of the startle responses to louder sonic booms was shorter (Cogger *et al*. 1980).

Cogger *et al*. (1980) indicated that low-flying helicopters, loud boat noises, and humans were the most disturbing to pinnipeds. According to the research, although the space launch and associated operational activity noises have not had a measurable effect on the pinniped population, it also suggests that there was a greater "disturbance level" exhibited during launch activities. There was a recommendation to continue observations for behavioral effects and to perform long-term population monitoring (Cogger *et al*. 1980).

The continued presence of single or multiple noise sources could cause marine mammals to leave a preferred habitat. However, it does not appear likely that overflights could cause migration from suitable habitats because aircraft noise over water is mobile and would not persist over any particular area. Aircraft noise, including supersonic noise, currently occurs in the overwater airspace of Eglin, Tyndall, and Langley Air Force Bases (AFBs) from sorties predominantly involving jet aircraft. Survey results reported in Davis *et al*. indicate that cetaceans (i.e., dolphins) occur under all of the Eglin and Tyndall marine airspace (2000). The continuing presence of dolphins indicates that aircraft noise does not discourage use of the area and apparently does not harm the locally occurring population.

In a summary by the National Parks Service on the effects of noise on marine mammals, it was determined that gray whales and harbor porpoises showed no outward behavioral response to aircraft noise or overflights (1994). Bottlenose dolphins showed no obvious reaction in a study involving helicopter overflights at 1,200 to 1,800 feet above the water. They also did not show any reaction to survey aircraft unless the shadow of the aircraft passed over them, at which point there was some observed tendency to dive (Richardson *et al*. 1995). Other anthropogenic noises in the marine environment from ships and pleasure craft may have more of an effect on marine mammals than aircraft noise (U.S. Air Force 2000). The noise effects on cetaceans appear to be somewhat attenuated by the air/water interface. The cetacean fauna along the coast of California have been subjected to sonic booms from military aircraft for many years without apparent adverse effects (Tetra Tech Inc. 1997).

Manatees appear relatively unresponsive to human-generated noise to the point that they are often suspected of being deaf to oncoming boats (although their hearing is actually similar to that of pinnipeds) (Bullock *et al*. 1980). Little is known about the importance of acoustic communication to manatees, although they are known to produce at least ten different types of sounds and are thought to have sensitive hearing (Richardson *et al*. 1995). Manatees continue to occupy canals near Miami International Airport, which suggests that they have become habituated to human disturbance and noise (Metro-Dade County 1995). Manatees spend most of their time below the surface and do not startle readily, so no effect of aircraft overflights on manatees would be expected (Bowles *et al*. 1991b).

C2.6.4 Birds

Song Birds

Auditory research conducted on birds indicates that they fall between reptiles and mammals relative to hearing sensitivity. According to Dooling, within the range of 1,000 to 5,000 Hz, birds show a level of hearing sensitivity similar to that of the more sensitive mammals (1978). In contrast to mammals, bird sensitivity falls off at a greater rate with increasing and decreasing frequencies. Passive observations and studies examining aircraft bird strikes indicate that birds nest and forage near airports. Aircraft noise in the vicinity of commercial airports apparently does not inhibit bird presence and use.

High-noise events (like a low-altitude aircraft overflight) may cause birds to engage in escape or avoidance behaviors, such as flushing from perches or nests (Ellis *et al*. 1991). These activities impose an energy cost on the birds that, over the long term, may affect survival or growth. In addition, the birds may spend less time engaged in necessary activities like feeding, preening, or caring for their young because they spend time in noise-avoidance activity. However, the long-term significance of noise-related impacts is less clear. Several studies on nesting raptors have indicated that birds become habituated to aircraft overflights and that long-term reproductive success is not affected (Grubb and King 1991; Ellis *et al*. 1991). Threshold noise levels for significant responses range from 62 dB for Pacific black brant to 85 dB for crested tern (Ward and Stehn 1990; Brown 1990).

Songbirds were observed to become silent prior to the onset of a sonic boom event (F-111 jets), followed by "raucous discordant cries." There was a return to normal singing within 10 seconds after the boom (Higgins 1974 in Manci *et al*. 1988). Ravens responded by emitting protestation calls, flapping their wings, and soaring.

Manci *et al*. reported a reduction in reproductive success in some small territorial passerines (i.e., perching birds or songbirds) after exposure to low-altitude overflights (1988). However, it has been observed that passerines are not driven any great distance from a favored food source by a nonspecific disturbance, such as aircraft overflights (U.S. Forest Service 1992). Further study may be warranted.

A study, conducted cooperatively between the DoD and the U.S. Fish and Wildlife Serve (USFWS), assessed the response of the red-cockaded woodpecker to a range of military training noise events, including artillery, small arms, helicopter, and maneuver noise (Pater *et al*. 1999). The project findings show that the red-cockaded woodpecker successfully acclimates to military noise events. Depending on the noise level, which ranged from innocuous to very loud, the birds responded by flushing from their

nest cavities. When the noise source was closer and the noise level was higher, the number of flushes increased proportionately. In all cases, however, the birds returned to their nests within a relatively short period of time (usually within 12 minutes). Additionally, the noise exposure did not result in any mortality or statistically detectable changes in reproductive success (Pater *et al*. 1999). Red-cockaded woodpeckers did not flush when artillery simulators were more than 122 meters away and SEL noise levels were 70 dBA.

Lynch and Speake studied the effects of both real and simulated sonic booms on the nesting and brooding eastern wild turkey in Alabama (1978). Hens at four nest sites were subjected to between 8 and 11 combined real and simulated sonic booms. All tests elicited similar responses, including quick lifting of the head and apparent alertness for between 10 and 20 seconds. No apparent nest failure occurred as a result of the sonic booms.

Twenty-one brood groups were also subjected to simulated sonic booms. Reactions varied slightly between groups, but the largest percentage of groups reacted by standing motionless after the initial blast. Upon the sound of the boom, the hens and poults fled until reaching the edge of the woods (approximately 4 to 8 meters). Afterward, the poults resumed feeding activities while the hens remained alert for a short period of time (approximately 15 to 20 seconds). In no instances were poults abandoned, nor did they scatter and become lost. Every observation group returned to normal activities within a maximum of 30 seconds after a blast.

C2.6.5 Raptors

In a literature review of raptor responses to aircraft noise, Manci *et al*. found that most raptors did not show a negative response to overflights (1988). When negative responses were observed they were predominantly associated with rotor-winged aircraft or jet aircraft that were repeatedly passing within 0.5 mile of a nest.

Ellis *et al*. performed a study to estimate the effects of low-level military jet aircraft and mid-to high-altitude sonic booms (both actual and simulated) on nesting peregrine falcons and seven other raptors (common black-hawk, Harris' hawk, zone-tailed hawk, red-tailed hawk, golden eagle, prairie falcon, bald eagle) (1991). They observed responses to test stimuli, determined nest success for the year of the testing, and evaluated site occupancy the following year. Both long- and short-term effects were noted in the study. The results reported the successful fledging of young in 34 of 38 nest sites (all eight species) subjected to low-level flight and/or simulated sonic booms. Twenty-two of the test sites were revisited in the following year, and observations of pairs or lone birds were made at all but one nest. Nesting attempts were underway at 19 of 20 sites that were observed long enough to be certain of breeding activity. Re-occupancy and productivity rates were within or above expected values for self-sustaining populations.

Short-term behavior responses were also noted. Overflights at a distance of 150 meters or less produced few significant responses and no severe responses. Typical responses included crouching or, very rarely, flushing from the perch site. Significant responses were most evident before egg laying and after young were "well grown." Incubating or brooding adults never burst from the nest, thus

preventing egg breaking or knocking chicks out of the nest. Jet passes and sonic booms often caused noticeable alarm; however, significant negative responses were rare and did not appear to limit productivity or re-occupancy. The locations of some of the nests may have caused some birds to be habituated to aircraft noise. There were some test sites located at distances far from zones of frequent military aircraft usage, and the test stimuli were often closer, louder, and more frequent than would be likely for a normal training situation.

Manci *et al*. noted that a female northern harrier was observed hunting on a bombing range in Mississippi during bombing exercises (1988). The harrier was apparently unfazed by the exercises, even when a bomb exploded within 200 feet. In a similar case of habituation/non-disturbance, a study on the Florida snail-kite stated that the greatest reaction to overflights (approximately 98 dBA) was "watching the aircraft fly by." No detrimental impacts to distribution, breeding success, or behavior were noted.

Bald Eagle

The effects of aircraft overflight on the bald eagle (*Haliaeetus leucocephalus*) have been studied relatively well, compared to most wildlife species. Bald eagle behavioral responses, varying from altering posture to taking flight and/or departing the area, have been associated with overflights of jets, helicopters, and light planes (Grubb and Bowerman 1997). One study observed 47 percent of wintering bald eagles flushed when approached closer than 984 feet (300 meters) with Army helicopters; however, few eagles flushed in response to helicopter traffic staying over 300 meters in the same areas (Stalmaster and Kaiser 1997). Overall, there have been no reports of reduced reproductive success or physiological risks to bald eagles exposed to aircraft overflights or other types of military noise and habituation behavior was observed in several studies (Fraser *et al.* 1985; Stalmaster and Kaiser 1997; Grubb and Bowerman 1997; Brown *et al*. 1999; see review in Buehler 2000). Most researchers have documented that pedestrians and helicopters were more disturbing to bald eagles than fixed-wing aircraft, including military jets (Fraser *et al*. 1985; Grubb and King 1991; Grubb and Bowerman 1997). Recorded responses to 779 events involving military jet aircraft at median distances of 500 meters ranged from no response (67 percent), an alert posture (29 percent), taking flight (3 percent), or temporarily departing the immediate area (1 percent). Median approach distance for the few instances of eagles taking flight was 200 meters. There was considerably more reaction to helicopters than to jets or light planes (Grubb and King 1991; Grubb and Bowerman 1997). In their 1997 study, Grubb and Bowerman recommended a buffer of 1,968 feet (600 meters) around bald eagle nests for all aircraft during the breeding season.

Golden Eagle

In their guidelines for aerial surveys, USFWS (Pagel *et al.* 2010) summarized past studies by stating that most golden eagles respond to survey aircraft (fixed- and rotary-wing) by remaining on their nests, and continuing to incubate or roost. Surveys take place generally as close as 10 to 20 meters from cliffs (including hovering less than 30 seconds if necessary to count eggs) and no farther than 200 meters from cliffs depending on safety (Pagel *et al.* 2010).

Grubb *et al*. (2007) experimented with multiple exposure to two helicopter types and concluded that flights with a variety of approach distances (800, 400, 200, and 100 meters) had no effect on golden eagle nesting success or productivity rates within the same year or on rates of renewed nesting activity the following year when compared to the corresponding figures for the larger population of non-manipulated nest sites (Grubb *et al*. 2007). They found no significant, detrimental, or disruptive responses in 303 helicopter passes near eagles. In 227 AH-64 Apache helicopter experimental passes (considered twice as loud as a civilian helicopter also tested) at test distances of 0–800 meters from nesting golden eagles, 96 percent resulted in no more response than watching the helicopter pass. No greater reactions occurred until after hatching when individual golden eagles exhibited five flatten and three fly behaviors at three nest sites. The flight responses occurred at approach distances of 200 meters or less. No evidence was found of an effect on subsequent nesting activity or success, despite many of the helicopter flights occurring during early courtship and nest repair. None of these responding pairs failed to successfully fledge young, except for one nest that fell later in the season. Excited, startled, avoidance reactions were never observed. Non-attending eagles or those perched away from the nests were more likely to fly than attending eagles, but also with less potential consequence to nesting success (Grubb *et al*. 2007). Golden eagles appeared to become less responsive with successive exposures. Much of helicopter sound energy may be at a lower frequency than golden eagles can hear, thus reducing expected impacts. Grubb *et al.* (2007) found no relationship between helicopter sound levels and corresponding eagle ambient behaviors or limited responses, which occurred throughout recorded test levels (76.7–108.8 dB, unweighted). The authors thought that the lower than expected behavioral responses may be partially due to the fact that the golden eagles in the area appear acclimated to the current high levels of outdoor recreational, including aviation, activities. Based on the results of this study, the authors recommended reduction of existing buffers around nest sites to 100 meters (325 feet) for helicopter activity.

Richardson and Miller (1997) reviewed buffers as protection for raptors against disturbance from ground-based human activities. No consideration of aircraft activity was included. They stressed a clear line of sight as an important factor in a raptor's response to a particular disturbance, with visual screening allowing a closer approach of humans without disturbing a raptor. A GIS-assisted viewshed approach combined with a designated buffer zone distance was found to be an effective tool for reducing potential disturbance to golden eagles from ground-based activities (Richardson and Miller 1997). They summarized recommendations that included a median 0.5-mile (800-meter) buffer (range = 200-1,600 m, n = 3) to reduce human disturbances (from ground-based activities such as rock climbing, shooting, vehicular activity) around active golden eagle nests from February 1 to August 1 based on an extensive review of other studies (Richardson and Miller 1997). Physical characteristics (i.e., screening by topography or vegetation) are important variables to consider when establishing buffer zones based on raptors' visual- and auditory-detection distances (Richardson and Miller 1997).

Mexican Spotted Owl (MSO)

In a 1997 helicopter overflight study, MSO did not flush from a nest or perch unless a helicopter was as close as 330 feet (Delaney *et al*. 1997). Researchers in Colorado found that MSO responses to F-16 overflights exhibited minimal responses at elevations of 1,500 feet above canyon rims where owls were day-roosting at elevations ranging from 650 to 975 feet below the canyon rims, which would put the

overflight level at approximately 2,150 to 2,475 feet above the MSOs (Johnson and Reynolds 2002). The observers also noted that MSO responses to the F-16 overflights were often less significant than responses to naturally occurring events such as thunderstorms. Similarly, Delaney *et al*. (1999) found that the MSOs quickly returned to normal day-roosting behavior after being disturbed by helicopters. A 6-year study conducted by Air Combat Command (ACC 2008) found that aircraft overflight had no effect on occupancy of MSO activity centers and found no correlations among measures of aircraft exposure and nesting success. Additionally, no flushing or loss of adults or young was observed in response to any aircraft overflights, including 40 observations of military jet aircraft overflight that came within 500 feet of nesting owls. This study also found that natural habitat characteristics such as topography, forest cover, distance to water sources, and precipitation were better predictors of nesting success than exposure to aircraft overflight.

Osprey

A 1998 study by Trimper *et al*. in Goose Bay, Labrador, Canada focused on the reactions of nesting osprey to military overflights by CF-18 Hornets. Reactions varied from increased alertness and focused observation of planes to adjustments in incubation posture. No overt reactions (e.g., startle response, rapid nest departure) were observed as a result of an overflight. Young nestlings crouched as a result of any disturbance until they grew to 1 to 2 weeks prior to fledging. Helicopters, human presence, float planes, and other ospreys elicited the strongest reactions from nesting ospreys. These responses included flushing, agitation, and aggressive displays. Adult osprey showed high nest occupancy rates during incubation regardless of external influences.

The osprey observed occasionally stared in the direction of the flight before it was audible to the observers. The birds may have been habituated to the noise of the flights; however, overflights were strictly controlled during the experimental period. Strong reactions to float planes and helicopter may have been due to the slower flight and therefore longer duration of visual stimuli rather than noise-related stimuli.

Red-Tailed Hawk

Anderson *et al*. conducted a study that investigated the effects of low-level helicopter overflights on 35 red-tailed hawk nests (1989). Some of the nests had not been flown over prior to the study. The hawks that were naïve (i.e., not previously exposed) to helicopter flights exhibited stronger avoidance behavior (nine of 17 birds flushed from their nests) than those that had experienced prior overflights. The overflights did not appear to affect nesting success in either study group. These findings were consistent with the belief that red-tailed hawks habituate to low-level air traffic, even during the nesting period.

C2.6.6 Upland Game Birds

Greater Sage-grouse

The greater sage-grouse was recently designated as a candidate species for protection under the Endangered Species Act after many years of scrutiny and research (USFWS 2010). This species is a

widespread and characteristic species of the sagebrush ecosystems in the Intermountain West. Greater sage-grouse, like most bird species, rely on auditory signals as part of mating. Sage-grouse are known to select their leks based on acoustic properties and depend on auditory communication for mating behavior (Braun 2006). Although little specific research has been completed to determine what, if any, effects aircraft overflight and sonic booms would have on the breeding behavior of this species, factors that may be important include season and time of day, altitude, frequency, and duration of overflights, and frequency and loudness of sonic booms.

Booth *et al*. (2009) found, while attempting to count sage-grouse at leks (breeding grounds) using light sport aircraft at 150 meters (492 feet) to 200 meters (650 feet) AGL, that sage-grouse flushed from leks on 12 of 14 approaches when the airplane was within 656 to 984 feet (200–300 meters) of the lek. In the other two instances, male grouse stopped exhibiting breeding behavior and crouched but stayed on the lek. The time to resumption of normal behavior after disturbance was not provided in this study. Strutting ceased around the time when observers on the ground heard the aircraft. The light sport aircraft could be safely operated at very low speed (68 kilometers/hour or 37 nautical miles/hour) and was powered by either a two-stroke or a four-stroke engine. It is unclear how the response to the slow-flying light sport aircraft used in the study would compare to overflight by military jets, operating at speeds 10 to 12 times as great as the aircraft used in the study. It is possible that response of the birds was related to the slow speed of the light sport aircraft causing it to resemble an aerial predator.

Other studies have found disturbance from energy operations and other nearby development have adversely affected breeding behavior of greater sage-grouse (Holloran 2005; Doherty 2008; Walker *et al.* 2007; Harju *et al.* 2010). These studies do not specifically address overflight and do not isolate noise disturbance from other types (e.g., visual, human presence) nor do they generally provide noise levels or qualification of the noise source (e.g., continuous or intermittent, frequency, duration).

Because so few studies have been done on greater sage-grouse response to overflights or sonic booms, research on related species may be applicable. Observations on other upland game bird species include those on the behavior of four wild turkey (*Meleagris gallapavo*) hens on their nests during real and simulated sonic booms (Manci *et al*. 1988). Simulated sonic booms were produced by firing 5-centimeter mortar shells, 300 to 500 feet from the nest of each hen. Recordings of pressure for both types of booms measured 0.4 to 1.0 pounds per square foot (psf) at the observer's location.

Turkey hens exhibited only a few seconds of head alert behavior at the sound of the sonic boom. No hens were flushed off the nests, and productivity estimates revealed no effect from the booms. Twenty brood groups were also subjected to simulated sonic booms. In no instance did the hens desert any poults (young birds), nor did the poults scatter or desert the rest of the brood group. In every observation, the brood group returned to normal activity within 30 seconds after a simulated sonic boom. Similarly, researchers cited in Manci *et al*. (1988) observed no difference in hatching success of bobwhite quail (*Colinus virginianus*) exposed to simulated sonic booms of 100 to 250 micronewtons per square meter.

Lesser Prairie-chicken

The lesser prairie-chicken (*Tympanuchus pallidicinctus*) is an umbrella species for the short- and mixed-grass prairie ecosystem of the south-central United States (Pruett *et al*. 2009). This upland grouse species shares many characteristics with the greater sage-grouse and is showing similar population declines. Some declines corresponded with the past losses of and degradation of quality prairie habitat by land use practices and fire. But since the 1980s, lesser prairie-chicken numbers have continued to decline despite the near cessation of large-scale land conversion for agriculture. Research generally points to low nest success and poor chick survival as the most important contributing factors (Robel *et al*. 2004). In addition, the lesser prairie-chicken has shown some sensitivity to human activities that can limit its occupied range (USFWS and BLM 2008; Davis *et al*. 2008; Pruett *et al*. 2009). The species has been an ESA candidate for listing for over 10 years. No studies on aircraft overflight effects to lesser prairie-chicken were found.

It is not fully understood what adverse effects to the lesser prairie-chicken are caused by human disturbances. Noise and movement of anthropogenic features may play an important part of detrimental cumulative effects, including pump jacks at wellheads, center-pivot irrigation booms, and vehicles on roads (Robel *et al*. 2004). A study in Kansas showed that lesser prairie-chickens seldom nest within 200 yards of oil or gas wellheads, 400 yards of power lines, 860 yards of improved roads, and 1,370 yards of large structures (Robel *et al*. 2004). The authors measured the distance at which noise from these features were audible to investigators, recording 0.6 mile for the irrigation center-pivots to over 2 miles for gas compressor stations. Studies to determine whether noise from oil drilling may have played a role in the abandonment of a number of historically active lek sites near Carlsbad, New Mexico found that the vicinity of abandoned leks had more active wells, more total wells, and greater length of road than the vicinity of active leks, and were more likely than active leks to be near power lines (Hunt 2004). Predation and collisions with fences, power lines, and vehicles remain the greatest direct causes of mortality for the species.

As described for greater sage-grouse, the lesser prairie-chicken breeds at leks and relies on auditory signals as part of mating. Although little specific research has been completed to determine what, if any, effects aircraft overflight and sonic booms would have on the breeding behavior of this species, factors that may be important include season and time of day, altitude, duration, and frequency of overflights, and frequency and loudness of sonic booms, if any.

C2.6.7 Migratory Waterfowl

In their review, Manci *et al*. noted that aircraft can be particularly disturbing to waterfowl (1988). The USFWS Waterfowl Management Handbook (Korschgen and Dahlgren 1992) lists “loud noise” as caused by aircraft as the top disturbance category for waterfowl. Several studies showed that migratory waterfowl (e.g., ducks and geese) expend more energy when exposed to repeated aircraft overflights, at least in the short term (Bowles 1995). Waterfowl are sensitive to disturbance because of their aggregation into large flocks during their migration and overwintering. When at rest, the flocks are typically in water bodies or wetlands exposed to the open sky and subject to aerial and ground predation. Taking flight is their defense against either types of predation. Waterfowl flocks seem to be

as sensitive as their most responsive individual in the flock is, so that larger flocks would have a greater chance of responding than small ones (Bowles 1995).

A variety of studies cited in Bowles (1995) has indicated that migratory waterfowl exposed to overflights by light aircraft and helicopters did not habituate completely to overflight. Due to the danger to aircraft and aircrews posed by potential collisions with waterfowl and other flocking birds, the Bird-Aircraft Strike Hazard (BASH) has received much attention by the military. BASH programs exist at every air installation and areas where low-level aircraft flight training takes place (e.g., military training routes [MTRs]) have locations of seasonal concentrations of waterfowl identified and guidance for pilots with regard to elevational or lateral separation from these sites at specific seasons and times of day to avoid or minimize the potential for collision. This avoidance in turn reduces the potential for disturbance of migratory waterfowl concentrations by military aircraft overflight.

A study of caged American black ducks was conducted by Fleming *et al*. in 1996. It was determined that noise had negligible energetic and physiologic effects on adult waterfowl. Measurements included body weight, behavior, heart rate, and enzymatic activity. Experiments also showed that adult ducks exposed to high noise events acclimated rapidly and showed no effects. The study also investigated the reproductive success of captive ducks, which indicated that duckling growth and survival rates at Piney Island, North Carolina were lower than those at a background location. In contrast, observations of several other reproductive indices (i.e., pair formation, nesting, egg production, and hatching success) showed no difference between Piney Island and the background location. Potential effects on wild duck populations may vary, as wild ducks at Piney Island have presumably acclimated to aircraft overflights. It was not demonstrated that noise was the cause of adverse impacts. A variety of other factors, such as weather conditions, drinking water and food availability and variability, disease, and natural variability in reproduction, could explain the observed effects. Fleming noted that drinking water conditions (particularly at Piney Island) deteriorated during the study, which could have affected the growth of young ducks. Further research would be necessary to determine the cause of any reproductive effects.

Another study by Conomy *et al*. exposed previously unexposed ducks to 71 noise events per day that equaled or exceeded 80 dBA (1998). It was determined that the proportion of time black ducks reacted to aircraft activity and noise decreased from 38 percent to 6 percent in 17 days and remained stable at 5.8 percent thereafter. In the same study, the wood duck did not appear to habituate to aircraft disturbance. This supports the notion that animal response to aircraft noise is species-specific. Because a startle response to aircraft noise can result in flushing from nests, migrants and animals living in areas with high concentrations of predators would be the most vulnerable to experiencing effects of lowered birth rates and recruitment over time. Species that are subjected to infrequent overflights do not appear to habituate to overflight disturbance as readily.

The presence of humans and low-flying helicopters in the Mackenzie Valley North Slope area did not appear to affect the population density of Lapland longspurs, but the experimental group was shown to have reduced hatching and fledging success and higher nest abandonment. Human presence appeared to have a greater impact on the incubating behavior of the black brant, common eider, and Arctic tern than fixed-wing aircraft (Gunn and Livingston 1974). Gunn and Livingston also found that waterfowl and seabirds in the Mackenzie Valley and North Slope of Alaska and Canada became acclimated to float

plane disturbance over the course of three days (1974). Additionally, it was observed that potential predators (bald eagle) caused a number of birds to leave their nests. Non-breeding birds were observed to be more reactive than breeding birds. Waterfowl were affected by helicopter flights, while snow geese were disturbed by Cessna 185 flights. The geese flushed when the planes were under 1,000 feet, compared to higher flight elevations. An overall reduction in flock sizes was observed. It was recommended that aircraft flights be reduced in the vicinity of pre-migratory staging areas.

Snow geese (*Chen caerulescens*) were more easily disturbed by aircraft prior to fall migration than at the beginning of the nesting season (Belanger and Bedard 1989). On an autumn staging ground in Alaska (i.e., prior to fall migration), 75 percent of brant (*Branta bernicla*) and only 9 percent of Canada geese (*Branta canadensis*) flew in response to aircraft overflights (Ward *et al*. 1999). Although mean response of brant and Canada geese generally was inversely proportional to aircraft altitude, there was a greater response to aircraft at 1,000 to 2,500 feet AGL than at lower or higher altitudes. The Ward *et al*. (1999) study used several types of commercial fixed wing and rotary wing aircraft for 356 overflights over four years.

C2.6.8 Wading and Shore Birds

Black *et al*. studied the effects of low-altitude (less than 500 feet above ground level) military training flights with sound levels from 55 to 100 dBA on wading bird colonies (i.e., great egret, snowy egret, tricolored heron, and little blue heron) (1984). The training flights involved three or four aircraft, which occurred once or twice per day. This study concluded that the reproductive activity--including nest success, nestling survival, and nestling chronology--was independent of F-16 overflights. Dependent variables were more strongly related to ecological factors, including location and physical characteristics of the colony and climatology.

Another study on the effects of circling fixed-wing aircraft and helicopter overflights on wading bird colonies found that at altitudes of 195 to 390 feet, there was no reaction in nearly 75 percent of the 220 observations (Kushlan 1978). Ninety percent displayed no reaction or merely looked toward the direction of the noise source. Another 6 percent stood up, 3 percent walked from the nest, and 2 percent flushed (but were without active nests) and returned within 5 minutes (Kushlan 1978). Apparently, non-nesting wading birds had a slightly higher incidence of reacting to overflights than nesting birds. Seagulls observed roosting near a colony of wading birds in another study remained at their roosts when subsonic aircraft flew overhead (Burger 1981). Colony distribution appeared to be most directly correlated to available wetland community types and was found to be distributed randomly with respect to military training routes. These results suggest that wading bird species presence was most closely linked to habitat availability and that they were not affected by low-level military overflights (U.S. Air Force 2000).

Burger studied the response of migrating shorebirds to human disturbance and found that shorebirds did not fly in response to aircraft overflights, but did flush in response to more localized intrusions (i.e., humans and dogs on the beach) (1986). Burger studied the effects of noise from JFK Airport in New York on herring gulls that nested less than 1 kilometer from the airport (1981). Noise levels over the nesting colony were 85 to 100 dBA on approach and 94 to 105 dBA on takeoff. Generally, there did not appear

to be any prominent adverse effects of subsonic aircraft on nesting, although some birds flushed when a Concorde flew overhead and, when they returned, engaged in aggressive behavior. Groups of gulls tended to loaf in the area of the nesting colony, and these birds remained at the roost when the Concorde flew overhead. Up to 208 of the loafing gulls flew when supersonic aircraft flew overhead. These birds would circle around and immediately land in the loafing flock (U.S. Air Force 2000).

Few studies show responses of water birds to sonic booms. One widely cited report (Austin *et al.* 1970) was inconclusive regarding the cause of the reproductive failure of a colony of sooty terns (*Sterna fuscata*) on the Dry Tortugas in 1969 as to whether behavioral response of adults to sonic booms from extremely low-flying military jets (<100 meters AGL) or overgrowth of island vegetation were causal factors. Actions were taken to curb planes breaking the sound barrier within range of the Tortugas, and much of the excess vegetation was cleared. In mid-May 1970, the birds appeared to be having a normal nesting season. Subsequent laboratory tests of exposure of eggs to sonic booms and other impulsive noises (Bowles *et al.* 1991a; Bowles *et al*. 1994; Cottereau 1972; Cogger and Zegarra 1980) failed to show adverse effects on the hatching of eggs. A structural analysis (Ting *et al*. 2002) showed that, even under extraordinary circumstances, sonic booms would not damage an avian egg.

C2.6.9 Fish, Reptiles, and Amphibians

The effects of overflight noise on fish, reptiles, and amphibians have been poorly studied, but conclusions regarding their expected responses have involved speculation based upon known physiologies and behavioral traits of these taxa (Gladwin *et al*. 1988). Although fish do startle in response to low-flying aircraft noise, and probably to the shadows of aircraft, they have been found to habituate to the sound and overflights. Reptiles and amphibians that respond to low frequencies and those that respond to ground vibration, such as spadefoots (genus Scaphiopus), may be affected by noise. Limited information is available on the effects of short-duration noise events on reptiles. Dufour in 1980 and Manci *et al*. in 1988, summarized a few studies of reptile responses to noise. Some reptile species tested under laboratory conditions experienced at least temporary threshold shifts or hearing loss after exposure to 95 dB for several minutes. Crocodilians in general have the most highly developed hearing of all reptiles. Crocodile ears have lids that can be closed when the animal goes under water. These lids can reduce the noise intensity by 10 to 12 dB (Wever and Vernon 1957). On Homestead Air Reserve Station, Florida, two crocodilians (the American Alligator and the Spectacled Caiman) reside in wetlands and canals along the base runway suggesting that they can coexist with existing noise levels of an active runway including DNLs of 85 dB.

C2.6.10 Summary

Some physiological/behavioral responses such as increased hormonal production, increased heart rate, and reduction in milk production have been described in a small percentage of studies. A majority of the studies focusing on these types of effects have reported short-term or no effects.

The relationships between physiological effects and how species interact with their environments have not been thoroughly studied. Therefore, the larger ecological context issues regarding physiological effects of jet aircraft noise (if any) and resulting behavioral pattern changes are not well understood.

Animal species exhibit a wide variety of responses to noise. It is therefore difficult to generalize animal responses to noise disturbances or to draw inferences across species, as reactions to jet aircraft noise appear to be species-specific. Consequently, some animal species may be more sensitive than other species and/or may exhibit different forms or intensities of behavioral responses. For instance one study suggests that wood ducks appear to be more sensitive and more resistant to acclimation to jet aircraft noise than Canada geese. Similarly, wild ungulates seem to be more easily disturbed than domestic animals.

The literature does suggest that common responses include the "startle" or "fright" response and, ultimately, habituation. It has been reported that the intensities and durations of the startle response decrease with the numbers and frequencies of exposures, suggesting no long-term adverse effects. The majority of the literature suggests that domestic animal species (cows, horses, chickens) and wildlife species exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft noise and sonic booms.

Animal responses to aircraft noise appear to be somewhat dependent on, or influenced by, the size, shape, speed, proximity (vertical and horizontal), engine noise, color, and flight profile of planes. Helicopters also appear to induce greater intensities and durations of disturbance behavior as compared to fixed-wing aircraft. Some studies showed that animals that had been previously exposed to jet aircraft noise exhibited greater degrees of alarm and disturbance to other objects creating noise, such as boats, people, and objects blowing across the landscape. Other factors influencing response to jet aircraft noise may include wind direction, speed, and local air turbulence; landscape structures (i.e., amount and type of vegetative cover); and, in the case of bird species, whether the animals are in the incubation/nesting phase.

C2.7 Noise Effects on Property Values

Property within a noise zone (or Accident Potential Zone) may be affected by the availability of federally guaranteed loans. According to U.S. Department of Housing and Urban Development (HUD), Federal Housing Administration (FHA), and Veterans Administration (VA) guidance, sites are acceptable for program assistance, subsidy, or insurance for housing in noise zones of less than 65 dB DNL, and sites are conditionally acceptable with special approvals and noise attenuation in noise zones greater than 65 dB DNL. HUD's position is that noise is not the only determining factor for site acceptability, and properties should not be rejected only because of airport influences if there is evidence of acceptability within the market and if use of the dwelling is expected to continue. Similar to the Navy's and Air Force's Air Installation Compatible Use Zone Program, HUD, FHA, and VA recommend sound attenuation for housing in the higher noise zones and written disclosures to all prospective buyers or lessees of property within a noise zone (or Accident Potential Zone).

Newman and Beattie reviewed the literature to assess the effect of aircraft noise on property values (1985). One paper by Nelson, reviewed by Newman and Beattie, suggested a 1.8 to 2.3 percent decrease in property value per dB at three separate airports, while at another period of time, they found only a 0.8 percent devaluation per dB change in DNL (1978). However, Nelson also noted a decline in noise depreciation over time which was theorized to be due to either noise sensitive people being

replaced by less sensitive people or the increase in commercial value of the property near airports; both ideas were supported by Crowley (1978). Ultimately, Newman and Beattie summarized that while an effect of noise was observed, noise is only one of the many factors that is part of a decision to move close to, or away from, an airport, but which is sometimes considered an advantage due to increased opportunities for employment or ready access to the airport itself. With all the issues associated with determining property values, their reviews found that decreases in property values usually range from 0.5 to 2 percent per dB increase of cumulative noise exposure.

More recently, Fidell *et al*. studied the influences of aircraft noise on actual sale prices of residential properties in the vicinity of two military facilities, and found that equations developed for one area to predict residential sale prices in areas unaffected by aircraft noise worked equally well when applied to predicting sale prices of homes in areas with aircraft noise in excess of 65 dB DNL (1996). Thus, the model worked equally well in predicting sale prices in areas with and without aircraft noise exposure. This indicates that aircraft noise had no meaningful effect on residential property values. In some cases, the average sale prices of noise exposed properties were somewhat higher than those elsewhere in the same area. In the vicinity of Davis-Monthan AFB in Tucson, Arizona, Fidell found the homes near the AFB were much older, smaller, and in poorer condition than homes elsewhere. These factors caused the equations developed for predicting sale prices in areas further away from the base to be inapplicable with those nearer the AFB. However, similar to other researchers, Fidell found that differences in sale prices between homes with and without aircraft noise were frequently due to factors other than noise itself.

Property values in the vicinity of airports and military airfields continue to be studied to determine if, and to what extent, aircraft noise could contribute to a discount in property values. A 2004 study by Nelson combined the results of 33 airfield related property value studies at 23 different airfields in locations throughout the United States and Canada. The Nelson study estimated that a property could be discounted between 0.005 and 0.006 per dB DNL between the 65 dB DNL and 75 dB DNL noise contours. The property value discount above 75 dB DNL was not able to be defined based on study data but was estimated to be greater than the discount between 65 and 75 dB DNL (Nelson 2004).

C2.8 Noise Effects on Structures

C2.8.1 Subsonic Aircraft Noise

Normally, the most sensitive components of a structure to airborne noise are the windows and, infrequently, the plastered walls and ceilings. An evaluation of the peak sound pressures impinging on the structure is normally sufficient to determine the possibility of damage. In general, at sound levels above 130 dB, there is the possibility of the excitation of structural component resonance. While certain frequencies (such as 30 Hz for window breakage) may be of more concern than other frequencies, conservatively, only sounds lasting more than one second above a sound level of 130 dB are potentially damaging to structural components (National Research Council/National Academy of Sciences 1977). A study directed specifically at low-altitude, high-speed aircraft showed that there is little probability of structural damage from such operations (Sutherland 1989). One finding in that study is that sound

levels at damaging frequencies (e.g., 30 Hz for window breakage or 15 to 25 Hz for whole-house response) are rarely above 130 dB.

Noise-induced structural vibration may also cause annoyance to dwelling occupants because of induced secondary vibrations, or "rattle," of objects within the dwelling, such as hanging pictures, dishes, plaques, and bric-a-brac. Window panes may also vibrate noticeably when exposed to high levels of airborne noise, causing homeowners to fear breakage. In general, such noise-induced vibrations occur at sound levels above those considered normally incompatible with residential land use. Thus assessments of noise exposure levels for compatible land use should also be protective of noise-induced secondary vibrations.

C2.8.2 Sonic Booms

Sonic booms are commonly associated with structural damage. Most damage claims are for brittle objects, such as glass and plaster. Table C-8 summarizes the threshold of damage that might be expected at various overpressures. There is a large degree of variability in damage experience, and much damage depends on the pre-existing condition of a structure. Breakage data for glass, for example, spans a range of two to three orders of magnitude at a given overpressure. At 1 psf, the probability of a window breaking ranges from one in a billion (Sutherland 1990) to one in a million (Hershey and Higgins 1976). These damage rates are associated with a combination of boom load and glass condition. At 10 psf, the probability of breakage is between one in a hundred and one in a thousand. Laboratory tests of glass (White 1972) have shown that properly installed window glass will not break at overpressures below 10 psf, even when subjected to repeated booms, but in the real world glass is not in pristine condition.

Table C-8. Possible Damage to Structures From Sonic Booms

Sonic Boom Overpressure Nominal (psf)	*Type of Damage*	*Item Affected*
0.5 - 2	Plaster	Fine cracks; extension of existing cracks; more in ceilings; over door frames; between some plaster boards.
	Glass	Rarely shattered; either partial or extension of existing.
	Roof	Slippage of existing loose tiles/slates; sometimes new cracking of old slates at nail hole.
	Damage to outside walls	Existing cracks in stucco extended.
	Bric-a-brac	Those carefully balanced or on edges can fall; fine glass, such as large goblets, can fall and break.
	Other	Dust falls in chimneys.
2 - 4	Glass, plaster, roofs, ceilings	Failures show that would have been difficult to forecast in terms of their existing localized condition. Nominally in good condition.
4 - 10	Glass	Regular failures within a population of well-installed glass; industrial as well as domestic greenhouses.
	Plaster	Partial ceiling collapse of good plaster; complete collapse of very new, incompletely cured, or very old plaster.
	Roofs	High probability rate of failure in nominally good state, slurry-wash; some chance of failures in tiles on modern roofs; light roofs (bungalow) or large area can move bodily.

Table C-8. Possible Damage to Structures From Sonic Booms		
Sonic Boom Overpressure Nominal (psf)	***Type of Damage***	***Item Affected***
	Walls (out)	Old, free standing, in fairly good condition can collapse.
	Walls (in)	Inside ("party") walls known to move at 10 psf.
Greater than 10	Glass	Some good glass will fail regularly to sonic booms from the same direction. Glass with existing faults could shatter and fly. Large window frames move.
	Plaster	Most plaster affected.
	Ceilings	Plaster boards displaced by nail popping.
	Roofs	Most slate/slurry roofs affected, some badly; large roofs having good tile can be affected; some roofs bodily displaced causing gale-end and will-plate cracks; domestic chimneys dislodged if not in good condition.
	Walls	Internal party walls can move even if carrying fittings such as hand basins or taps; secondary damage due to water leakage.
	Bric-a-brac	Some nominally secure items can fall; e.g., large pictures, especially if fixed to party walls.

Source: Haber and Nakaki 1989

Damage to plaster occurs at similar ranges to glass damage. Plaster has a compounding issue in that it will often crack due to shrinkage while curing, or from stresses as a structure settles, even in the absence of outside loads. Sonic boom damage to plaster often occurs when internal stresses are high from these factors.

Some degree of damage to glass and plaster should thus be expected whenever there are sonic booms, but usually at the low rates noted above. In general, structural damage from sonic booms should be expected only for overpressures above 10 psf.

C2.9 Noise Effects on Terrain

C2.9.1 Subsonic Aircraft Noise

Members of the public often believe that noise from low-flying aircraft can cause avalanches or landslides by disturbing fragile soil or snow structures in mountainous areas. There are no known instances of such effects, and it is considered improbable that such effects will result from routine, subsonic aircraft operations**.**

C2.9.2 Sonic Booms

In contrast to subsonic noise, sonic booms are considered to be a potential trigger for snow avalanches. Avalanches are highly dependent on the physical status of the snow, and do occur spontaneously. They can be triggered by minor disturbances, and there are documented accounts of sonic booms triggering avalanches. Switzerland routinely restricts supersonic flight during avalanche season. Landslides are not an issue for sonic booms. There was one anecdotal report of a minor landslide from a sonic boom generated by the Space Shuttle during landing, but there is no credible mechanism or consistent pattern of reports.

C2.10 Noise Effects on Historical and Archaeological Sites

Because of the potential for increased fragility of structural components of historical buildings and other historical sites, aircraft noise may affect such sites more severely than newer, modern structures. Most scientific studies of the effects of noise and vibration on historic properties have considered potential impacts on standing architecture. For example, the FAA published a study of potential impacts resulting from vibrations caused by the noise of subsonic Concorde overflights on five historic properties, including a restored plantation house, a stone bridge and tollhouse, and other structures (Hershey *et al*. 1975). This study analyzed the breakage probabilities of structural elements that might be considered susceptible to vibration, such as window glass, mortar, and plaster. The results indicated that, with the exception of some already cracked window glass, there was no practical risk of noise-induced vibration damage to any of these structures.

Some studies of the effects of overflights—both subsonic and supersonic—on archaeological structures and other types of sites also have been published. Battis examined the effects of low altitude overflights of B-52, RF-4C, and A-7 aircraft on standing walls at Long House Ruin in northeastern Arizona (Battis 1988). The motion levels observed during all passes were well below a conservative threshold for vibration in ancient structures, a level of 1.3 millimeters per second, established by two previous studies. Battis concluded that vibration associated with aircraft overflights at speeds and altitudes similar to those measured in his study had/would have no significant damaging effect on Long House and similar sites.

Two Air Force-sponsored studies have included research into potential effects of supersonic overflight on "nonstructural" archaeology and unconventional structures. One study included historic buildings, prehistoric structures, water tanks, archaeological cave/shelter sites and rock art, and seismically sensitive areas such as avalanche and mud/rock slide areas (Sutherland *et al*. 1990). That study compared overpressure associated with different types of aircraft in supersonic flight at different altitudes with failure or damage stress values for these types of sites. The authors concluded that overpressures generated by supersonic overflight were well below established damage thresholds. Subsonic operations—which were not included in this study—would be even less likely to cause damage.

Battis also completed a study that examined the potential for damage by sonic booms to rock shelter and petroglyph sites located within the Valentine Military Operations Area (MOA) in Texas (Battis 1983). The Texas State Historic Preservation Office (SHPO) helped design and participated in this study, which involved taking measurements at a rock shelter site and at a field of petroglyphs-bearing boulders during supersonic overflights. The peak overpressure for booms generated during supersonic operations over the Valentine MOA was 5.2 psf. The lower limit (the least amount of pressure needed) for damaging rock was measured in the laboratory at 2.1 × 104 psf, 4,000 times the peak overpressure measured during the study.

Air Force National Environment Policy Act documents have examined the potential impacts on historic properties that might result from subsonic and supersonic overflights. In 1995, the Air Force published the *Environmental Assessment for Continued Supersonic Operations in the Black Mountain Supersonic*

Corridor and the Alpha/Precision Impact Range Area. Eligible and potentially eligible cultural resources in the area of potential effect include petroglyph and pictograph panels located on a variety of rock types, historic adobe and non-adobe structures with standing walls, and historic mines (which contain tunnels) and wells. The report concludes that supersonic low-altitude flights have occurred over these corridors for 25 years or more and have resulted in no significant impacts on cultural resources. The California SHPO agreed, and during National Historic Preservation Act Section 106 review of this undertaking, concurred with the Air Force's finding that continued supersonic overflights would have no effect on historic properties.

As noted above for the noise effects of noise-induced vibrations on normal structures, assessments of noise exposure levels for normally compatible land uses should also be protective of historic and archaeological sites.

C3.0 NOISE MODELING

C3.1 Subsonic Aircraft Noise

An aircraft in subsonic flight generally emits noise from two sources: the engines and flow noise around the airframe. Noise generation mechanisms are complex and, in practical models, the noise sources must be based on measured data. The Air Force has developed a series of computer models and aircraft noise databases for this purpose. The models include NOISEMAP (Moulton 1992) for noise around airbases, and MR_NMAP (Lucas and Calamia 1996) for use in MOAs, ranges, and low-level training routes. These models use the NOISEFILE database developed by the Air Force. NOISEFILE data includes SEL and L_{Amax} as a function of speed and power setting for aircraft in straight flight.

Noise from an individual aircraft is a time-varying continuous sound. It is first audible as the aircraft approaches, increases to a maximum when the aircraft is near its closest point, and then diminishes as it departs. The noise depends on the speed and power setting of the aircraft and its trajectory. The models noted above divide the trajectory into segments whose noise can be computed from the data in NOISEFILE. The contributions from these segments are summed.

MR_NMAP was used to compute noise levels in the airspace. The primary noise metric computed by MR_NMAP was L_{dnmr} averaged over each airspace. Supporting routines from NOISEMAP were used to calculate SEL and L_{Amax} for various flight altitudes and lateral offsets from a ground receiver position.

C3.2 Sonic Booms

When an aircraft moves through the air, it pushes the air out of its way. At subsonic speeds, the displaced air forms a pressure wave that disperses rapidly. At supersonic speeds, the aircraft is moving too quickly for the wave to disperse, so it remains as a coherent wave. This wave is a sonic boom. When heard at the ground, a sonic boom consists of two shock waves (one associated with the forward part of the aircraft, the other with the rear part) of approximately equal strength and (for fighter aircraft) separated by 100 to 200 milliseconds. When plotted, this pair of shock waves and the expanding flow between them has the appearance of a capital letter "N," so a sonic boom pressure wave is usually called an "N-wave." An N-wave has a characteristic "bang-bang" sound that can be

startling. Figure C-5 shows the generation and evolution of a sonic boom N-wave under the aircraft. Figure C-6 shows the sonic boom pattern for an aircraft in steady supersonic flight. The boom forms a cone that is said to sweep out a “carpet” under the flight track.

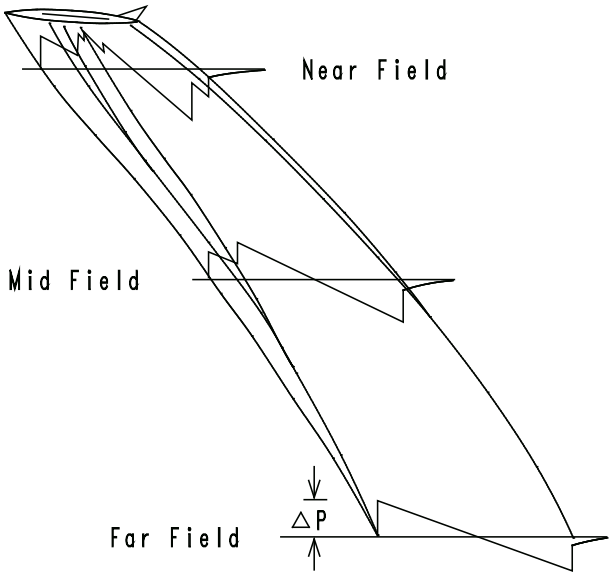


Figure C-5. Sonic Boom Generation and Evolution to N-Wave

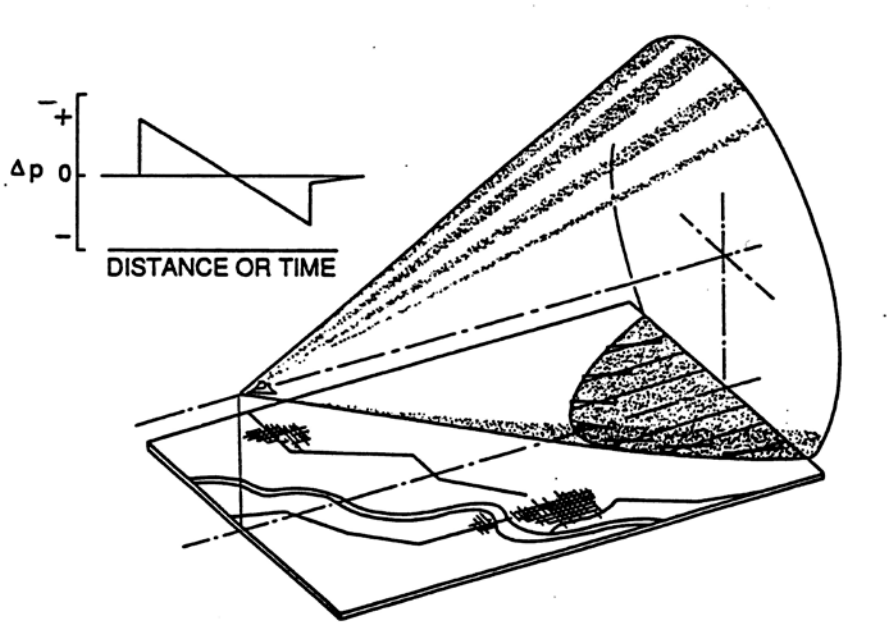


Figure C-6. Sonic Boom Carpet in Steady Flight

The complete ground pattern of a sonic boom depends on the size, shape, speed, and trajectory of the aircraft. Even for a nominally steady mission, the aircraft must accelerate to supersonic speed at the start, decelerate back to subsonic speed at the end, and usually change altitude. Figure C-7 illustrates the complexity of a nominal full mission.

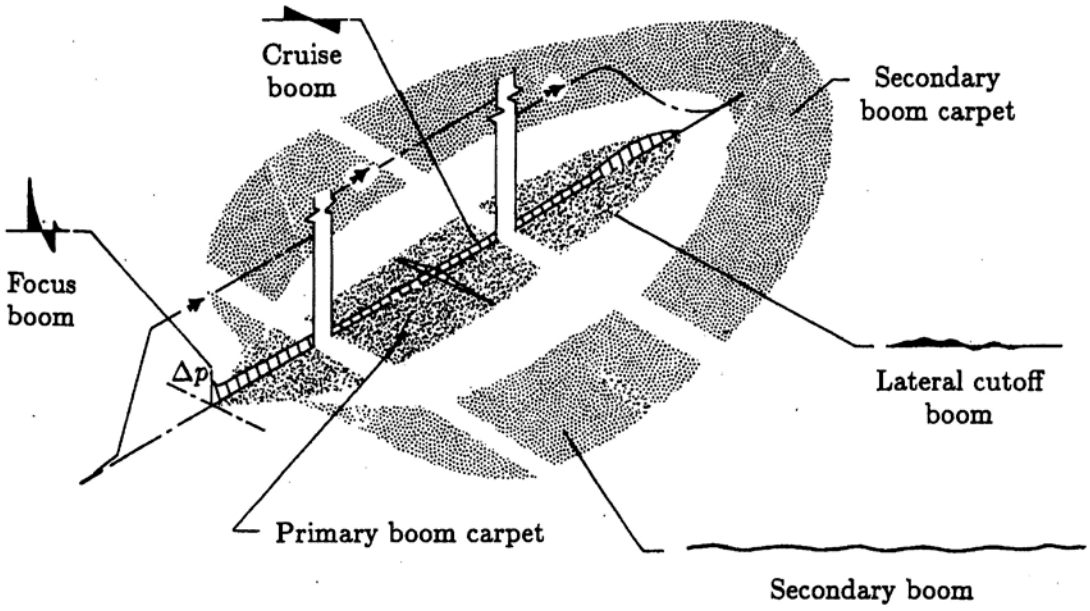


Figure C-7. Complex Sonic Boom Pattern for Full Mission

The Air Force's PCBoom4 computer program (Plotkin and Grandi 2002) can be used to compute the complete sonic boom footprint for a given single event, accounting for details of a particular maneuver.

Supersonic operations for the proposed action and alternatives are, however, associated with air combat training, which cannot be described in the deterministic manner that PCBoom4 requires. Supersonic events occur as aircraft approach an engagement, break at the end, and maneuver for advantage during the engagement. Long time cumulative sonic boom exposure, CDNL, is meaningful for this kind of environment.

Long-term sonic boom measurement projects have been conducted in four supersonic air combat training airspaces: White Sands, New Mexico (Plotkin *et al.* 1989); the eastern portion of the Goldwater Range, Arizona (Plotkin *et al.* 1992); the Elgin MOA at Nellis AFB, Nevada (Frampton *et al.* 1993); and the western portion of the Goldwater Range (Page *et al.* 1994). These studies included analysis of schedule and air combat maneuvering instrumentation data and supported development of the 1992 BOOMAP model (Plotkin *et al.* 1992). The current version of BOOMAP (Frampton *et al.* 1993, Plotkin 1996) incorporates results from all four studies. Because BOOMAP is directly based on long-term measurements, it implicitly accounts for such variables as maneuvers, statistical variations in operations, atmosphere effects, and other factors.

Figure C-8 shows a sample of supersonic flight tracks measured in the air combat training airspace at White Sands (Plotkin *et al.* 1989). The tracks fall into an elliptical pattern aligned with preferred engagement directions in the airspace. Figure C-9 shows the CDNL contours that were fit to six months of measured booms in that airspace. The subsequent measurement programs refined the fit, and demonstrated that the elliptical maneuver area is related to the size and shape of the airspace (Frampton *et al*. 1993). BOOMAP quantifies the size and shape of CDNL contours, and also numbers of booms per day, in air combat training airspaces. That model was used for prediction of cumulative sonic boom exposure in this analysis.

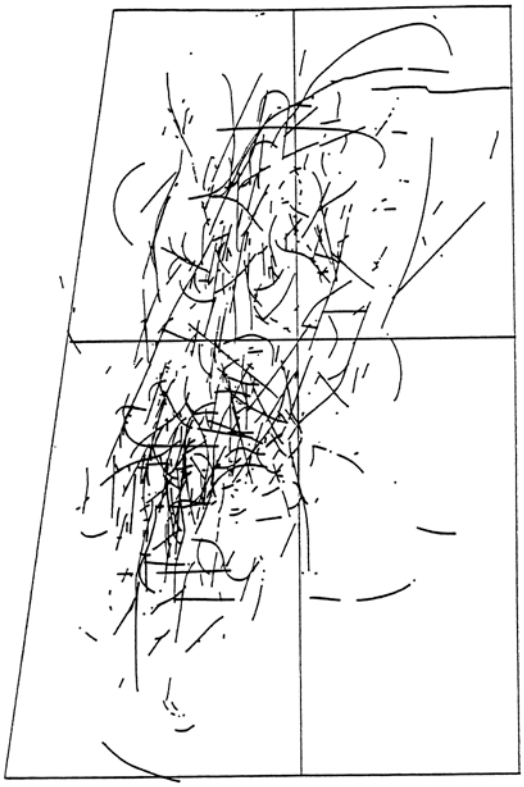


Figure C-8. Supersonic Flight Tracks in Supersonic Air Combat Training Airspace

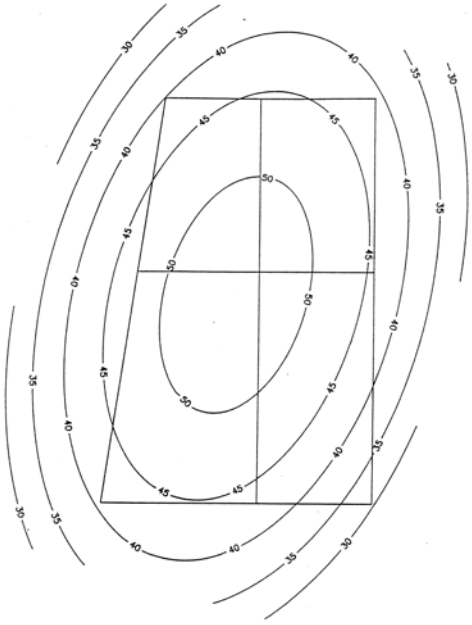


Figure C-9. Elliptical CDNL Contours in Supersonic Air Combat Training Airspace

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Appendix D

APPENDIX D: AIR QUALITY

Air quality impacts were estimated for the construction and operation activities associated with the basing of F-35A aircraft at one or more Air Combat Command (ACC) or Air National Guard (ANG) bases. The following is a discussion of the assumptions, references, and methods used to perform the air emission estimate calculations.

Construction

Air quality impacts from proposed construction activities were estimated from: 1) combustion emissions due to the use of fossil fuel-powered equipment; 2) fugitive dust emissions (particulate matter less than or equal to 10 microns in diameter [PM_{10}] and particulate matter less than or equal to 2.5 microns in diameter [$PM_{2.5}$]) during demolition activities, earth-moving activities, and the operation of equipment on bare soil; 3) volatile organic compound (VOC) emissions from application of asphalt materials during paving operations and 4) construction worker privately-owned vehicles (POVs).

Factors needed to derive the construction source emission rates were obtained from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling* (United States Environmental Protection Agency [USEPA] 2004); *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling—Compression-Ignition* (USEPA 2004); *Nonroad Engine and Vehicle Emission Study—Report* (USEPA 1991); *Conversion Factors for Hydrocarbon Emission Components* (USEPA 2005); *Comparison of Asphalt Paving Emission Factors* (CARB 2005); *Western Regional Air Partnership* (*WRAP) Fugitive Dust Handbook* (WRAP 2006); *Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust* (MRI 2005) and *Mobile 6.2.03* (USEPA 2003).

The analysis assumed that all construction equipment was manufactured before 2000. This approach is based on the well-known longevity of diesel engines, although use of 100 percent Tier 0 equipment may be somewhat conservative. The analysis also inherently reduced PM_{10} fugitive dust emissions from earth-moving activities by 50 percent as this control level is included in the emission factor itself (based on the estimated control effectiveness of watering).

Off-Road Equipment Emissions

The NONROAD model (USEPA 2008) is an USEPA standard method for preparing emission inventories for mobile sources that are not classified as being related to on-road traffic, railroads, air traffic, or water-going vessels. As such, it is a starting place for quantifying emissions from construction-related equipment. The NONROAD model uses the following general equation to estimate emissions separately for CO, NO_x, PM (essentially all of which is $PM_{2.5}$ from construction sources), and total hydrocarbons (THC), nearly all of which are non-methane hydrocarbons:

EMS = EF * HP * LF * Act * DF

Where:
EMS = estimated emissions
EF = emissions factor in grams per horsepower hours
HP = peak horsepower
LF = load factor (assumed percentage of peak horsepower)
Act = activity in hours of operation per period of operation
DF = deterioration factor

The emissions factor is specific to the equipment type, engine size, and technology type. The technology type for diesel equipment can be "base" (before 1988), "tier 0" (1988 to 1999), or "tier 1" (2000 to 2005). Tier 2 emissions factors could be applied to equipment that satisfies 2006 national standards (or slightly earlier California standards). The technology type for two-stroke gasoline equipment can be "base" (before 1997), "phase 1" (1997 to 2001), or "phase 2" (2002 to 2007). Equipment for phases 1 and 2 can have catalytic converters. For this study, all diesel equipment was assumed to be either tier 0 or tier 1 and all two-stroke diesel equipment was assumed to be phase 1 without catalytic converters.

The load factor is specific to the equipment type in the NONROAD model regardless of engine size or technology type, and it represents the average fraction of peak horsepower at which the engine is assumed to operate. NONROAD model default values were used in all cases. Because Tier 0 equipment was conservatively used throughout the analysis period, deterioration factors were not used to estimate increased emissions due to engine age. Based on the methodology described, it is possible to make a conservative estimate of emissions from off-road equipment if the types of equipment and durations of use are known.

Construction calculations were performed for the period 2012 through 2017, with specific years identified within the period for each scenario and for each installation.

Fugitive Dust

Emission rates for fugitive dust were estimated using guidelines outlined in the WRAP fugitive dust handbook (WRAP 2006). Although these guidelines were developed for use in western states, they assume standard dust mitigation best practices activities of 50 percent from wetting; therefore, they were deemed applicable but conservative for all of the sites evaluated for the proposed action. The WRAP handbook offers several options for selecting factors for PM_{10} (coarse PM) depending on what information is known.

After PM_{10} is estimated, the fraction of fugitive dust emitted as $PM_{2.5}$ is estimated, the most recent WRAP study (MRI 2005) recommends the use of a fractional factor of 0.10 to estimate the $PM_{2.5}$ portion of the PM_{10}.

For site preparation activities, the emission factor was obtained from Table 3-2 of the WRAP Fugitive Dust Handbook. The areas of disturbance and approximate durations were used in conjunction with the large scale of land-disturbing activities occurring, resulting in the selection of the first factor with worst-case conditions for use in the analysis.

PM_{10}, $PM_{2.5}$, and Mobile Sources

Diesel exhaust is a primary, well-documented source of $PM_{2.5}$ emissions. The vast majority of PM emissions in diesel exhaust is $PM_{2.5}$. Therefore, all calculated PM is assumed to be $PM_{2.5}$. A corollary result of this is that the PM_{10} fraction of diesel exhaust is estimated very conservatively as only a small fraction of PM_{10} is present in the exhaust. However, ratios of PM_{10} to $PM_{2.5}$ in diesel exhaust are not yet published and therefore for the purposes of the Environmental Impact Statement (EIS) calculations, all PM emissions are equally distributed as PM_{10} and $PM_{2.5}$.

VOC Emissions from Paving

VOC emissions from the application of hot mix asphalt were calculated for the construction. The estimates used estimated asphalt volumes, and used the published CARB hot mix asphalt emission factor.

Mobile Source Emissions

Mobile source emissions are associated with the temporary traffic increase during the construction periods at each location. For the purposes of estimating mobile source emissions from POVs, it was assumed that each construction worker drove a car and during the day drove an average of 5 miles in the vicinity (lunch and breaks). Emission factors were derived from the USEPA Mobile 6.2.03 emissions model for the years when construction would occur.

Operations

Operation emissions calculations performed for the Proposed Action include aircraft flight operations (both legacy aircraft and F-35A), aircraft engine maintenance runups (engine in aircraft and aircraft not located in a hush house), aerospace ground equipment (AGE), and POVs associated with commuting military staff.

Aircraft Flight Operations

Aircraft emissions were calculated based on the following inputs:

- Flight profiles were generated for legacy aircraft and the F-35A at each installation by Wyle Labs as part of this EIS.
- Legacy aircraft operation data (operating mode, fuel usage, emission factors) from U.S. Air Force Air Emissions Factor Guide to Air Force Mobile Sources (AFCEE September 2009).
- For the F-35A aircraft, FFR (fuel consumption), emission indices, and T3 (temperature) factors calculated using ITAR - FOUO - FFR-T3-EI determination.xls and T3 Card Deck F135 Sept 09 (SAIC undated).
- Idle/taxi times of 15 minutes applied to all legacy aircraft based on McEntire operations (Meyer 2010).
- Idle/taxi times of 20.24 and 25.17 minutes, respectively, based on TIM Template in ITAR - FOUO - FFR-T3-EI determination.xls (SAIC undated).
- Sulfur oxide emissions for legacy and F-35A aircraft calculated based on weight percent sulfur content of JP-8, as identified in Petroleum Quality Information System 2009 Annual Report (DESC 2010).
- Nitrous oxide and methane emission factors are derived from Table 2 of Federal GHG Accounting and Reporting Guidance Technical Document, Council on Environmental Quality (CEQ) (2010).

Aircraft Engine Maintenance Runups

Maintenance runup emissions were calculated using the following reference materials:

- Engine maintenance runup profiles for each installation were generated by Wyle Labs as part of this EIS. These profiles included number of events per year, the power settings and the time duration for each power setting.
- Legacy aircraft operation data (operating mode, fuel usage, emission factors) from Air Emissions Factor Guide to Air Force Mobile Sources (AFCEE September 2009).
- Engine settings, T3 and emission indices for F-35 aircraft calculated from ITAR - FOUO - FFR-T3-EI determination.xls (SAIC 2009).
- Sulfur oxide emissions for legacy and F-35A aircraft calculated based on weight percent sulfur content of JP-8, as identified in Petroleum Quality Information System 2009 Annual Report (DESC 2010).

Aerospace Ground Equipment

AGE associated with legacy aircraft and their operation time/landing take-off were obtained from Air Force Air Conformity Applicability Model 4.3. Criteria pollutant emission factors were obtained from Air Emissions Factor Guide to Air Force Mobile Sources (AFCEE September 2009). CO_2 emission factors derived from Direct Emissions from Mobile Combustion Sources (USEPA 2008), Table B-1. Where not otherwise provided, $PM_{2.5}$ calculated as 97 percent of PM_{10} emissions, in accordance with USEPA OTAQ/OAQPS guidance, *Commercial Marine, Airports, and Trains Approach*, EPA Docket #OAR-2003-0053-1696. Emissions for all pollutants were calculated based on the number of landing take-offs per year for each type of aircraft.

Privately-Owned Vehicles

POV emissions from commuting military staff were calculated using information regarding baseline staff population, staff increases/decreases associated with the proposed action, and type of installation (ANG or ACC).

For ANG installations, both full-time and part-time staff commutes to work. Part-time staff was assumed to commute to the installations one weekend per month and an additional two-week period per year. Additionally, full-time staff was assumed to live in closer proximity to the installations.

For ACC installations, full-time staff commuter population was based on the percent of baseline identified as not housed on the base, with 100 percent of any staff increases assumed to reside off-base. For staff reductions, the commuter reduction number was based on the same percent of total population as was used for the baseline population (88 percent for Shaw AFB and Hill AFB, 66 percent for Mountain Home AFB).